

Franklin County, Illinois

# Multi-Hazard Mitigation Plan

A 5-year Update to the Countywide MHMP  
originally adopted in 2009



FEMA

IEMA



Franklin County, Illinois  
Multi-Hazard Mitigation Plan  
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## Acronyms

<b>ASCE</b>	American Society of Civil Engineers	<b>HMGP</b>	Hazard Mitigation Grant Program
<b>ASDSO</b>	Association of Dam Safety Officials	<b>IBC</b>	International Building Code
<b>BRIC</b>	Building Resilient Infrastructure and Communities	<b>IDPH</b>	Illinois Department of Public Health
<b>CARES</b>	Coronavirus Aid, Relief, and Economic Security Act	<b>IEMA</b>	Illinois Emergency Management Agency
<b>CDC</b>	Centers for Disease Control	<b>IEPA</b>	Illinois Environmental Protection Agency
<b>CDMS</b>	Comprehensive Data Management System	<b>INDR</b>	Illinois Department of Natural Resources
<b>CISA</b>	Cybersecurity & Infrastructure Security Agency	<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>CNEOS</b>	Center for NEO Studies	<b>ISGS</b>	Illinois State Geological Survey
<b>COVID-19</b>	Coronavirus Disease-19	<b>ITTf</b>	Illinois Terrorism Task Force
<b>CRS</b>	Community Rating System	<b>MCS</b>	Mesoscale Convection System
<b>CUSEC</b>	The Central U.S. Earthquake Consortium	<b>MHMP</b>	Multi-Hazard Mitigation Plan
<b>DI</b>	Damage Indicators	<b>NASA</b>	National Aeronautics and Space Administration
<b>DMA</b>	Disaster Mitigation Act of 2000	<b>NEO</b>	Near Earth Object
<b>DOD</b>	Degrees of Damage	<b>NFIP</b>	National Flood Insurance Program
<b>DRA</b>	Delta Regional Authority	<b>NMSZ</b>	New Madrid Seismic Zone
<b>EAP</b>	Emergency Action Plan	<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>EF</b>	Enhanced Fujita (Tornado Scale)	<b>NORS</b>	National Outbreak Reporting System
<b>EPCRA</b>	Federal Emergency Planning and Community Right to Know Act of 1986	<b>NPDP</b>	National Performance of Dams Program
<b>FAST</b>	Fixing America's Surface Transportation Act of 2015	<b>NRCS</b>	National Resources Conservation Service
<b>FEMA</b>	Federal Emergency Management Agency	<b>NWS</b>	National Weather Service
<b>FERC</b>	Federal Energy Regulatory Commission	<b>PDM</b>	Pre-Disaster Mitigation Grant Program
<b>FMAG</b>	Fire Management Assistance Grant Program	<b>US EPA</b>	United States Environmental Protection Agency
<b>GERPDC</b>	Greater Egypt Regional Planning and Development Commission	<b>USACE</b>	United States Army Corps of Engineers
<b>GIS</b>	Geographic Information System	<b>USDA</b>	United States Department of Agriculture
<b>HAB</b>	Harmful Algal Bloom	<b>USFWS</b>	United States Fish and Wildlife Service
<b>Hazus-MH</b>	Hazus Multi Hazard (modeling software)	<b>USGS</b>	United States Geological Survey
<b>HHPD</b>	Rehabilitation of High Hazard Potential Dam Grant Program	<b>WVSZ</b>	Wabash Valley Seismic Zone



## 1. Introduction

The purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. (Stafford Act Title 44, Chapter 1, Part 201).

Hazard mitigation planning is required by the Disaster Mitigation Act of 2000 (DMA), which replaced the Stafford Act. Local, tribal, territorial, and state governments must adopt hazard mitigation plans and update them every five years in order to be eligible for the following Federal Emergency Management Agency (FEMA) grant and insurance programs:

- Hazard Mitigation Grant Program (HMGP)
- Building Resilient Infrastructure and Communities (BRIC)
- Fire Management Assistance Grant Program (FMAG)
- Public Assistance Grant Program (PA)
- Pre-Disaster Mitigation Grant Program (PDM)
- Rehabilitation of High Hazard Potential Dam Grant Program (HHPD)
- National Flood Insurance Program (NFIP)

While this planning process is required for natural hazards, planning partners were encouraged to include any hazards in this plan that pose potential threats to their communities. In addition to FEMA funding, having Multi-Hazard Mitigation Plans (MHMP) in place can streamline the process of applying for other federal, state, and local disaster mitigation and relief funding opportunities.

In order to help communities plan for natural hazards, FEMA developed Hazus Multi Hazard (MH), a geographic information system (GIS) based software that models earthquakes, floods, and other natural hazards. This software can estimate physical and economic losses and social impacts, help communities identify high risk areas, and provide the necessary information to create mitigation strategies for these natural hazards. Hazus-MH uses data from the US Census Bureau and allows for manual editing and additions of data. This ensures accuracy and relevancy to the county.

This Multi-Hazard Mitigation Plan, adopted by Franklin County and all jurisdictions within, fulfills the requirement of the DMA, which amended Section 322 of the Stafford Act, 42 U.S.C. 5165. The First MHMP for Franklin County was adopted in 2009. This will be the second update to the original plan.

## 2. Planning Process

Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to human life and property from a natural hazardous event. Hazard Mitigation Planning involves communities in a four-step process to identify risks and vulnerabilities to natural hazards and develop long-lasting strategies that lead to the development of a comprehensive approach to risk reduction and an effective mitigation plan<sup>1</sup>.

- Organize resources
- Assess risks
- Develop a mitigation plan
- Implement the plan and monitor progress

### Planning Timeline

The planning process was completed by Greater Egypt Regional Planning and Development Commission (Greater Egypt) and the Franklin County Planning Team. The planning team consists of at least 1 member representing each jurisdiction within the county. The planning timeline involved partner and public meetings, the writing and review of the plan, finalization of plan and adoption by the county and all jurisdictions, and state and federal review and approval.

Figure 2.1: MHMP planning timeline for 2021-2022

Mitigation Planning Timeline	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
	1	2	3	4	5	6	7	8	9	10	11	12	13
Meetings: Goals and Objectives													
Meetings: Public involvement													
Meetings: Mitigation Activities													
Write Plan													
Review Plan													
Finalize Plan													
Print Plan													
State/ Federal Review													

<sup>1</sup> Illinois Emergency Management Agency, "Mitigation Planning".

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### **Meeting 1: Goals and Objectives**

- *Greater Egypt presented the planning process and review the responsibilities of planning partners*
  - *Greater Egypt presented historical, current, and possible hazards that are a threat to the county. Maps of risk areas within the county and southern Illinois were included in presentation.*
  - *Greater Egypt reviewed the Hazus-MH hazard modeling process and reviewed essential and critical facilities data.*
    - *Planning partners were given the option to review and edit these datasets to provide the most accurate flood and earthquake models.*
  - *Planning partners participated in a hazard ranking exercise to determine which hazards have the highest severity and probability of occurring.*
    - *The top ranked hazards from this exercise were modeled using Hazus-MH and other GIS based software to estimate physical damage, economic loss, and social impacts if the hazard occurred.*
- 

### **Meeting 2: Public Involvement**

- *Meeting 2 consisted of a review of hazard rankings, preliminary hazard models, and an introduction to the mitigation strategies exercise.*
    - *The public was notified of this meeting through a series of newspaper press releases (see Appendix 5 for full list of press releases).*
  - *The public was encouraged to provide their input in the planning process, including providing suggestions of any additional hazards to include in the plan and any mitigation strategies*
    - *No public comments were received for this plan.*
- 

### **Meeting 3: Mitigation Strategies**

- *Greater Egypt reviewed the finalized hazard ranking list and summarized the mitigation strategies that were provided by planning partners.*
  - *Planning partners provided final comments and ideas for mitigation strategies.*
  - *This will be the final opportunity to provide mitigation strategies and update the Hazus essential facilities list*
- 

### **Meeting 4 (optional): Plan Review**

- *If requested by the planning team, Greater Egypt hosted a 4<sup>th</sup> meeting to review the final MHMP before each jurisdiction adopts the plan.*
    - *This will be the final opportunity for planning partners to request any edits and additions to the MHMP.*
-

## 2.1. Responsibilities of Planning Partners

The planning partners are vital to completion of the MHMP, knowledge and expertise of local leaders is necessary to identify hazards and develop mitigation strategies. FEMA also requires the participation of partners in order for the plan to be approved and adopted.

There are 28 participating jurisdictions and stakeholders in Franklin County. At least 1 member representing each jurisdiction is required to participate in the planning process. Planning partners were actively involved in the following activities (\* indicates required participation):

Attend at least two meetings during the planning process
Complete a hazard ranking exercise for your jurisdiction
Propose mitigation strategies for each hazard*
Assist with meeting match requirements
Review and provide comments on drafts of the full plan
Assist in coordinating public involvement
Review and update the county datasets
Integrate the MHMP into other planning and development initiatives as appropriate
Submit photographs, GIS files, and any other data relating to natural hazards, the county, or jurisdictions to improve the detail of the MHMP
Formally adopt the Franklin County MHMP as an official Plan* (Required for County and participating municipalities, optional for other organizations)

The full list of Planning Team members can be found in Appendix 1.

## 2.2. Neighboring Communities

Greater Egypt organized Planning Teams and wrote Multi-Hazard Mitigation Plans for the 5 Counties of its planning district: Franklin, Jackson, Jefferson, Perry, and Williamson. The EMA coordinators of these counties were in contact with each other and Greater Egypt throughout the planning process. EMA Coordinators, other County staff, and other jurisdictions attended meetings and assisted in planning for multiple counties. Meeting attendance can be found in Appendix 4; other planning activities are recorded in county match documents and can be available upon request.

## 2.3. Review of Technical Documents

The planning process included review of local, state, federal, and academic resources. The 2015 Franklin County Multi-Hazard Mitigation Plan was reviewed and incorporated into this updated version. Hazard background information is cited in footnotes throughout this Plan. GIS data sources are provided on every map. Data tables have sources listed below each table. Detailed GIS data can also be requested from Greater Egypt at any time from <https://greateregypt.org/gis-services/>

### 3. Franklin County Profile

#### 3.1. County Background

Franklin County was founded in 1818 by the Illinois General Assembly. The original boundary encompassed the area of both present-day Williamson and Franklin counties. Franklin County assumed its current political boundaries (Figure 3.1) with the founding of Williamson County in 1839. The first county seat was located in the home of Moses Garretix which was located near Francis Jordan's fort; the fort and surrounding area were later named Frankfort. In 1826, the county seat was moved to Franklin County's first dedicated courthouse in West Frankfort and in 1841 the county seat was moved to Benton where it resides to this day.

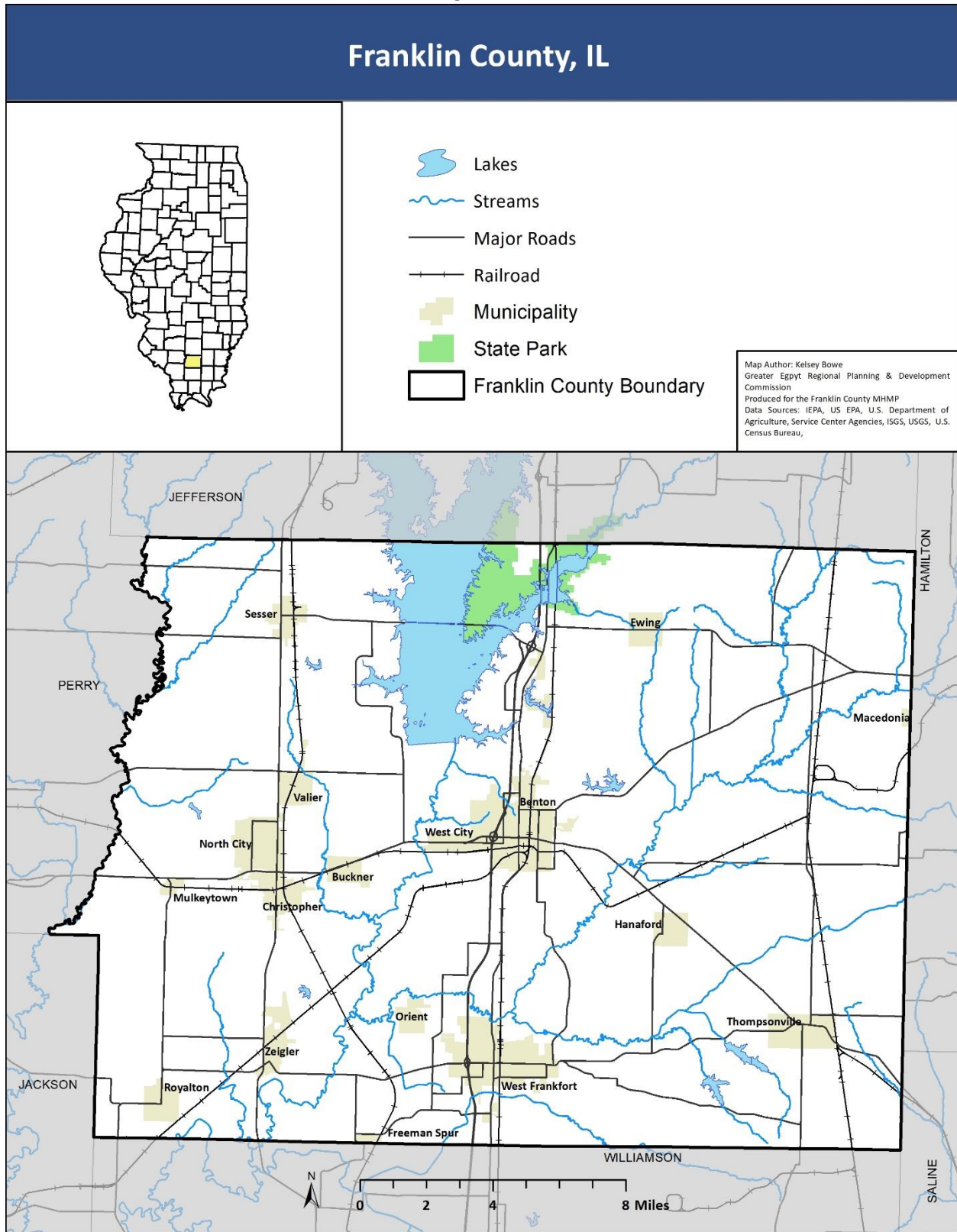
Franklin County is situated in the central region of southern Illinois. It lies approximately 100 miles southeast of St Louis, Missouri, 170 miles south of Springfield, Illinois, and 300 miles southwest of Chicago, Illinois. It is bordered by Perry and Jackson counties to the west, Williamson to the south, Hamilton and Saline to the east, and Jefferson to the north.

Franklin County began to develop its coal mining industry with the discovery of an outcrop of coal located near Andy's Creek in the 1880's. By the early 1900's, coal mining was booming and many people immigrated to work in the mines. As a result, the population in Franklin County doubled from 26,000 to 57,000 people. While the coal industry is no longer the primary economic driver in Franklin County, there are still active mining operations in the area.

Today, the major economic industries of Franklin County are manufacturing, recreation and tourism, public administration, retail services, and educational facilities. Benton and West Frankfort, which are located along the bustling Interstate 57 corridor, offer amenities such as restaurants, shopping centers, hotels, and entertainment venues. The construction of Rend Lake, completed in 1971, resulted in recreation and tourism becoming a primary economic driver for the County. Rend Lake, which was built by damming the Big Muddy River, is a vast 18,700-acre reservoir that allows for recreational opportunities such as fishing, hunting, boating, camping, and watersports. The reservoir also provides water for much of the region.

Franklin County, IL is part of the Delta Regional Authority (DRA) and is listed as a distressed county. The DRA is a federal-state partnership that encompasses 252 counties and parishes in the Mississippi River Delta and Alabama Black Belt regions. This organization is led by two president appointed chairpersons and the governors of the 8 participating states (Alabama, Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, Tennessee). The goal of the DRA is to improve the economic opportunities for the counties involved, which are considered the most distressed in the U.S.; Federal funds are allocated to the DRA every year, where they are invested into local communities based on applications. The DRA's total funding allocation budget in 2021 was \$14,847,923.00.

Figure 3.1



### 3.2. Demographics

Based on the 2020 decennial census, Franklin County has approximately 37,804 residents. This is an estimated 4.5% decrease in population from 2010 figures. Franklin County is divided into twelve townships: Barren, Northern, Eastern, Ewing, Cave, Browning, Goode, Six Mile, Tyrone, Denning, Frankfort, and Benton. The population by township within Franklin County can be seen in table 3.1 According to the U.S. Census Bureau, 93.8% of residents in Franklin County are white, 1.7% are Hispanic or Latino, and 0.5% are Black or African American. A full breakdown of race and Hispanic origins for Franklin County is displayed in Table 3.2.

Table 3.1 - Franklin County 2020 Population Estimates by Township

Township	Population
Barren	551
Benton	8,662
Browning	2,436
Cave	1,683
Denning	4,729
Eastern	589
Ewing	1,361
Frankfort	6,443
Goode	2,652
Northern	456
Six Mile	3,536
Tyrone	4,706

Source: U.S. Census Bureau

Table 3.2 - Race and Hispanic Origin of Population in Franklin County

Race and Hispanic Origins	Percentage of Population
American Indian and Alaska Native alone	0.3
Asian alone	0.3
Black or African American alone	0.5
Two or more races	4.6
Hispanic or Latino	1.7
White alone, not Hispanic or Latino	93.1
White alone	93.8
Native Hawaiian and Pacific Islander	0.0
Some other race	0.5

Source: U.S. Census Bureau



### 3.3. Economy and Industry

With Interstate 57 running through the center of Franklin County, the service industry is a major source of employment for residents of the county. In particular, Benton and West Frankfort have many restaurants, entertainment, and accommodation options. Additionally, the influx of tourism due to the many recreational opportunities associated with Rend Lake and Wayne Fitzgerald State Park provide a boost to the accommodation and food service industries. Table 3.3 displays the industries in Franklin County by the estimated number of people employed per industry. In addition to health care and the service industries, manufacturing is also a significant economic driver in the region. In particular, Crownline Boats Incorporation, located in West Frankfort, employs approximately 600 people. In total manufacturing provides approximately 1,900 jobs. According to the U.S. Census Bureau, Franklin County has a median household income of \$42,769 and a per capita income of \$24,098. Roughly 16.4% of the population is below the poverty line – the national poverty rate is 10.5%.

Table 3.3 - Number of People Employed by Major Industries in Franklin County

Industry	Estimated Number of Employees
Health Care & Social Assistance	2474
Retail Trade	2291
Manufacturing	1934
Educational Services	1459
Accommodation & Food Services	1130
Mining, Quarrying, Oil & Gas	658
Agriculture, Forestry, Fishing and Hunting	308

Source: Data from the Census Bureau ACS 5-year Estimate



### 3.4. Land Use and Development Trends

Before European settlement, Franklin County was largely comprised of deciduous forest with small areas of prairie. Over recent centuries, the land cover has been transformed by agriculture, mining, and minor urban development. Agriculture currently dominates the land cover of Franklin County; significant portions of the agricultural land are used for hay or livestock pasture as seen in Figure 3.3. Other major crops in the region include corn, soy, winter wheat, and oats.

Pockets of small urban development are located primarily along Interstate 57. Benton and West Frankfort are the largest cities in the county. Further residential and industrial development in the county has been clustered around these areas. Recent commercial growth has been focused around the West Frankfort area, while industrial land use is predominantly near Benton.

The coal mining industry was a driving economic force in Franklin County during the 19<sup>th</sup> and 20<sup>th</sup> centuries. While the coal industry has dwindled in the area in recent decades, ramifications of historic mining are still present today. There are small portions of Franklin County that have been left unsuitable for development or agriculture as a result of un-reclaimed mining sites.

There are many public use areas in Franklin County. The most significant are Rend Lake Conservancy District and Wayne Fitzgerald State Park. Other public uses include schools, parks, public utilities, etc.

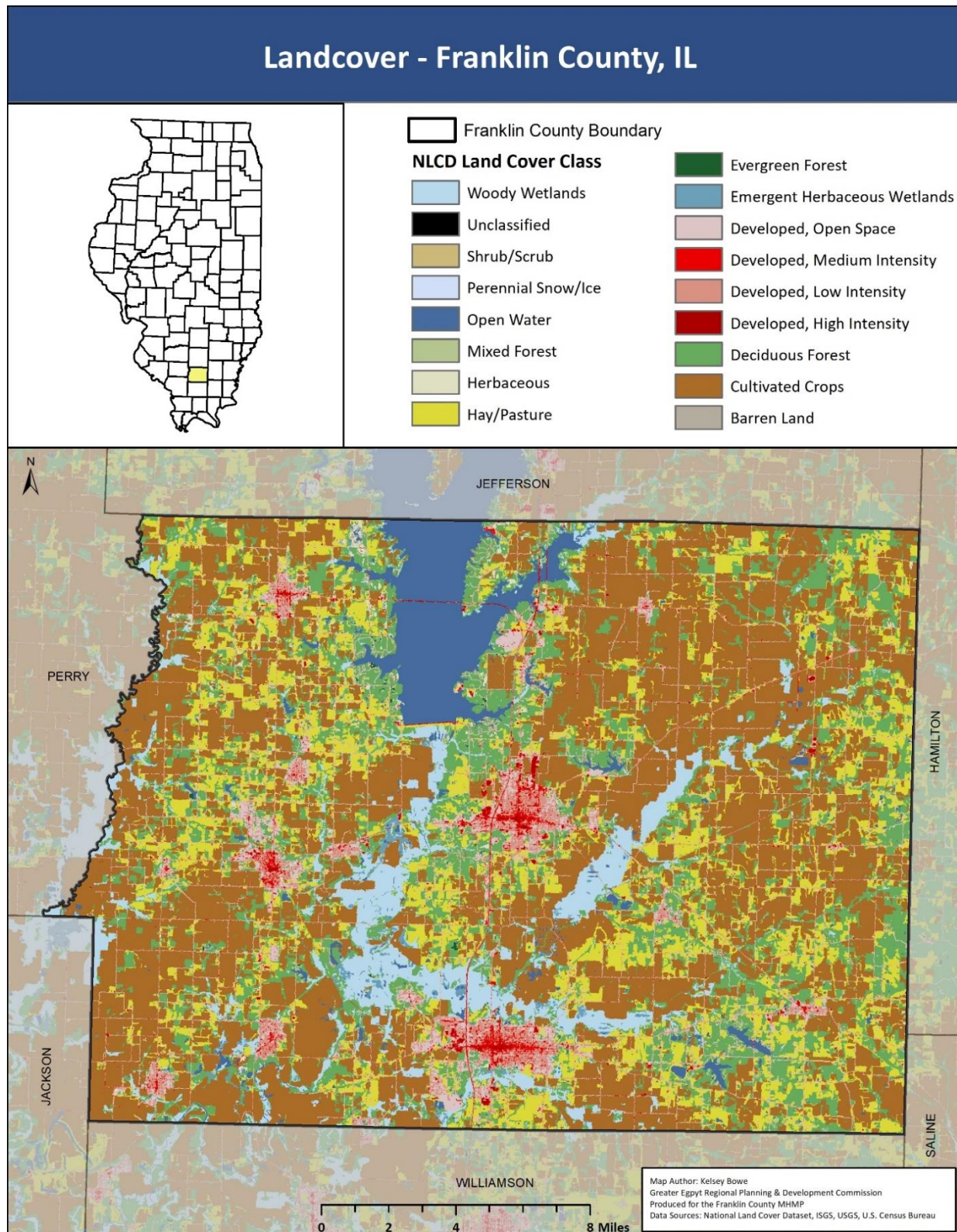
Other notable areas include Benton Municipal Airport, Frankfort Community Park, John A. Logan West Frankfort Extension Center, and the Benton Community Park District.

Franklin County dedicated its new courthouse on April 22, 2022 in Benton. The City of West Frankfort received an EDA grant for a new roundabout that was also completed in 2022. There have no major changes in development since the last plan update<sup>2</sup>.

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<sup>2</sup> Franklin County Economic Development Corp.

Figure 3.2



### **3.5. Climate**

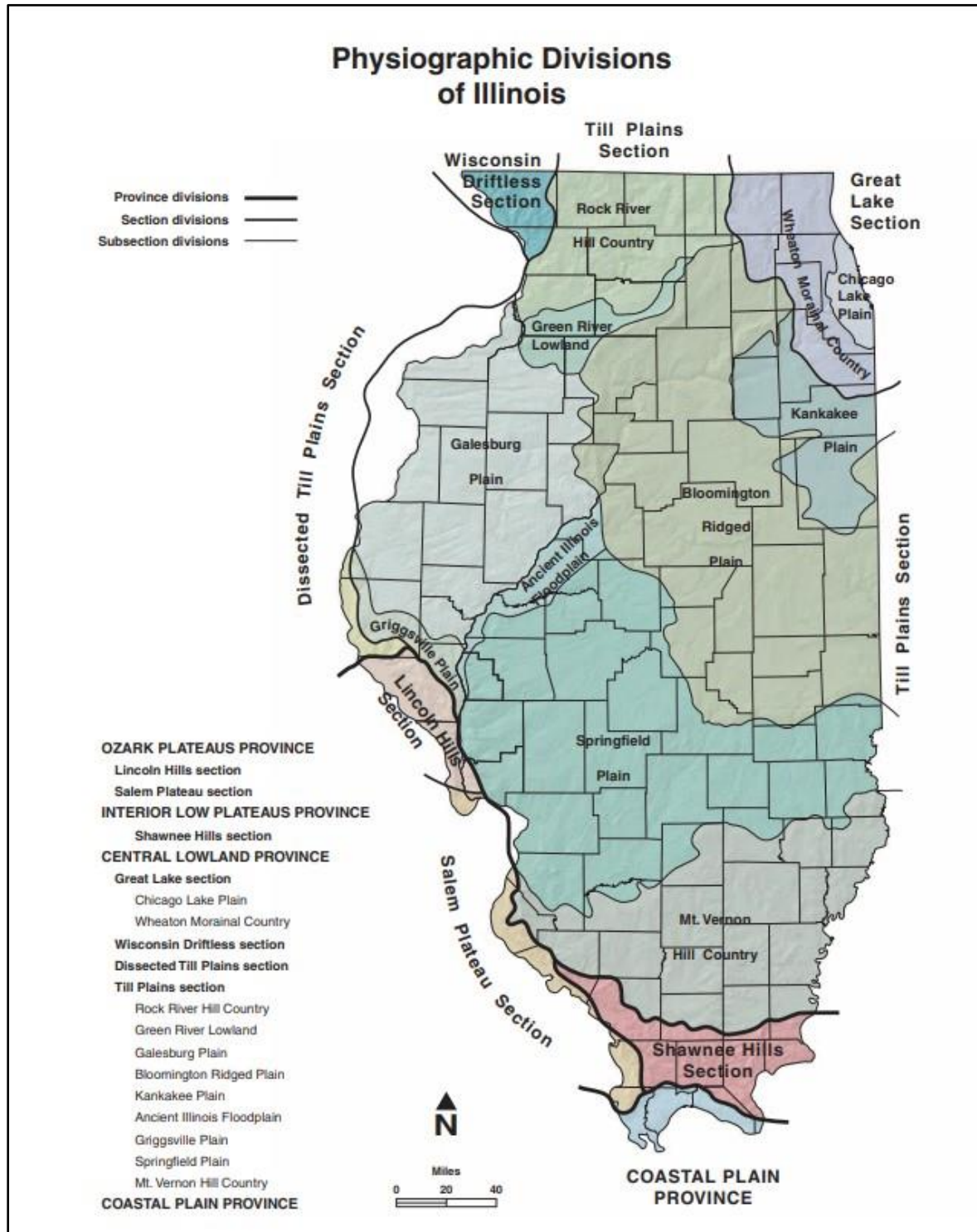
Franklin County lies within Köppen climate classification Dfa (humid continental). Summers are humid and warm, while winters are cool and wet. The warmest months are June – September with average highs reaching 89°F and lows in the mid to high 60s. Average highs in the winter are well above freezing; the average high in January is 40°F and the low is 24°F. However, this region is subject to wildly variable weather, often leading to weeks of stifling heat in the summer and very cold conditions in the winter. Average annual precipitation is 43.18 inches. Though daytime highs in the winter are often above freezing, cold spells with significant snowfall and/or ice buildup are not uncommon in the winter.

Climate change is altering many temperature and weather patterns in southern Illinois, and climate classifications are expected to shift north in the next 50 years. See Section 4 for details on climate change and specific effects on different hazards.

### **3.6. Topography & Hydrology**

Illinois is divided into four physiographic provinces with seven sections and 11 subsections (figure 3.3) Franklin County is located in the southern part of the Mt. Vernon Hill Country portion of the Till Plains region- just to the north of the Shawnee Hills physiographic division. The Till Plains topography resulted from the deposition of unsorted glacial sediments during the final stages of the Wisconsin glaciation. However, this region is predominantly controlled by bedrock and not deep sediment deposits. Despite being near the southern terminus of the glacier, Franklin County has no significant moraine or esker deposits. The area is characterized by generally flat prairie with some rolling hills. Stream valleys tend to be broad and shallow. Franklin County has a relatively small range in elevations throughout the county, with an elevation range of around 370 ft near Zeigler to 580 ft above sea level near Ewing.

Figure 3.3



Source: Illinois State Geological Survey (ISGS)

The majority of Franklin County resides in the Big Muddy watershed (Hydrologic Unit Code (HUC): 07140106). The Big Muddy watershed covers large portions of Franklin, Jackson, Jefferson, Perry, Washington, and Williamson Counties. It also drains small portions of Hamilton, Johnson, and Union Counties. The southeastern portion of Franklin County is drained by the Saline Watershed (HUC ID: 05140204). This watershed is comprised of the south, middle, and north forks of the Saline River, which flow southeast until converging with the Ohio River. Figure 3.4 shows the major HUC 8 watersheds in southern Illinois.

The Big Muddy River and several smaller creeks were dammed for the construction of Rend Lake. South of Rend Lake, the Middle Fork Big Muddy River, Little Muddy River, Pond Creek, Beaucoup Creek, and other smaller tributaries converge into the Big Muddy and drain to the Mississippi river.

In addition to the many rivers and creeks in Franklin County, there are nine major lakes: Sesser, Hamilton, New Christopher, New West Frankfort, Old West Frankfort, Benton, Moses, Rend, and Zeigler lakes. Rend lake is the largest reservoir in southern Illinois and the second largest in the state, it encompasses 20,633 acres in Franklin and Jefferson counties.<sup>3</sup> Figure 3.5 shows the major waterbodies and elevation of Franklin County.

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<sup>3</sup> Illinois Department of Natural Resources, "REND LAKE", [ifishillinois.org](http://ifishillinois.org).



Figure 3.4

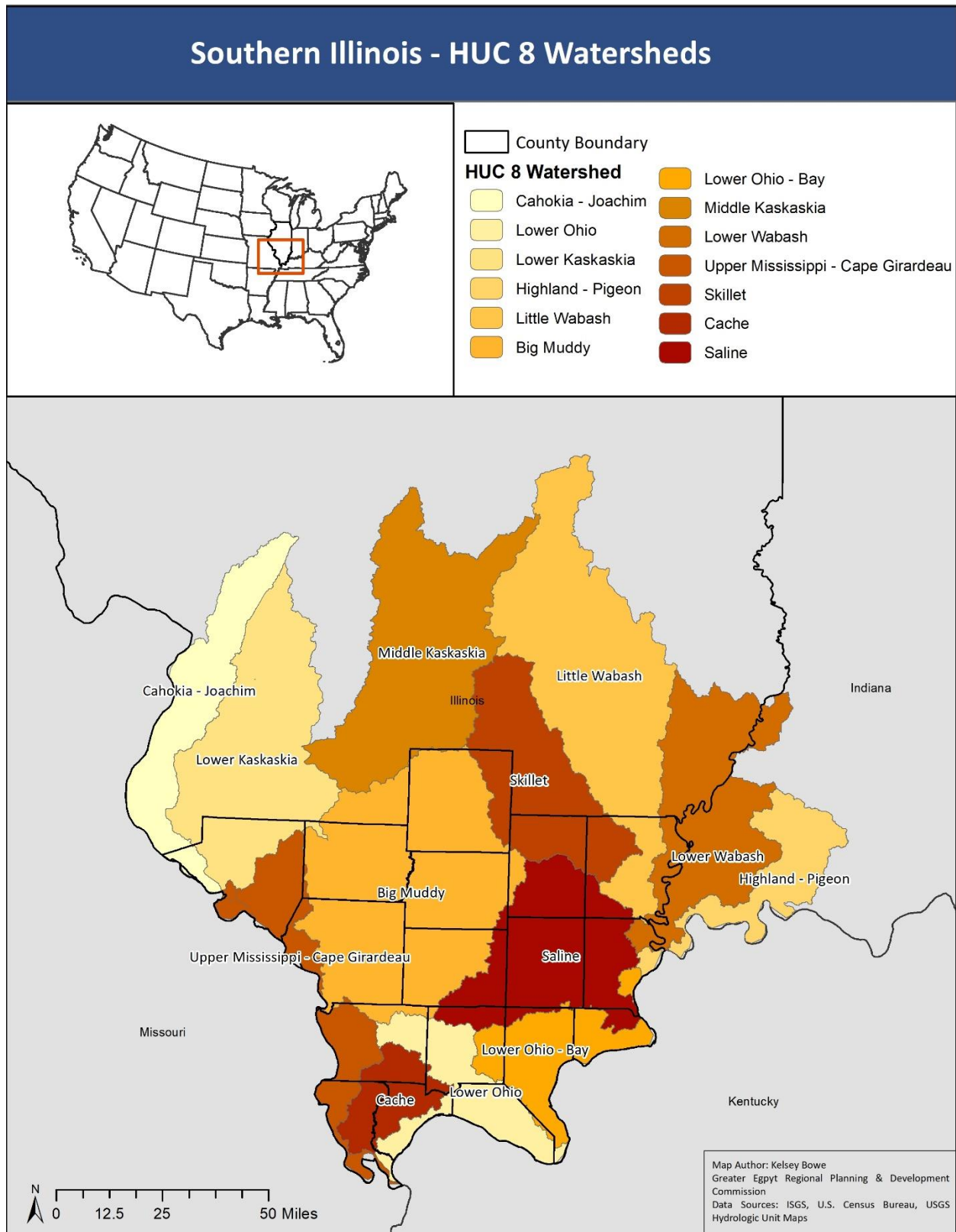
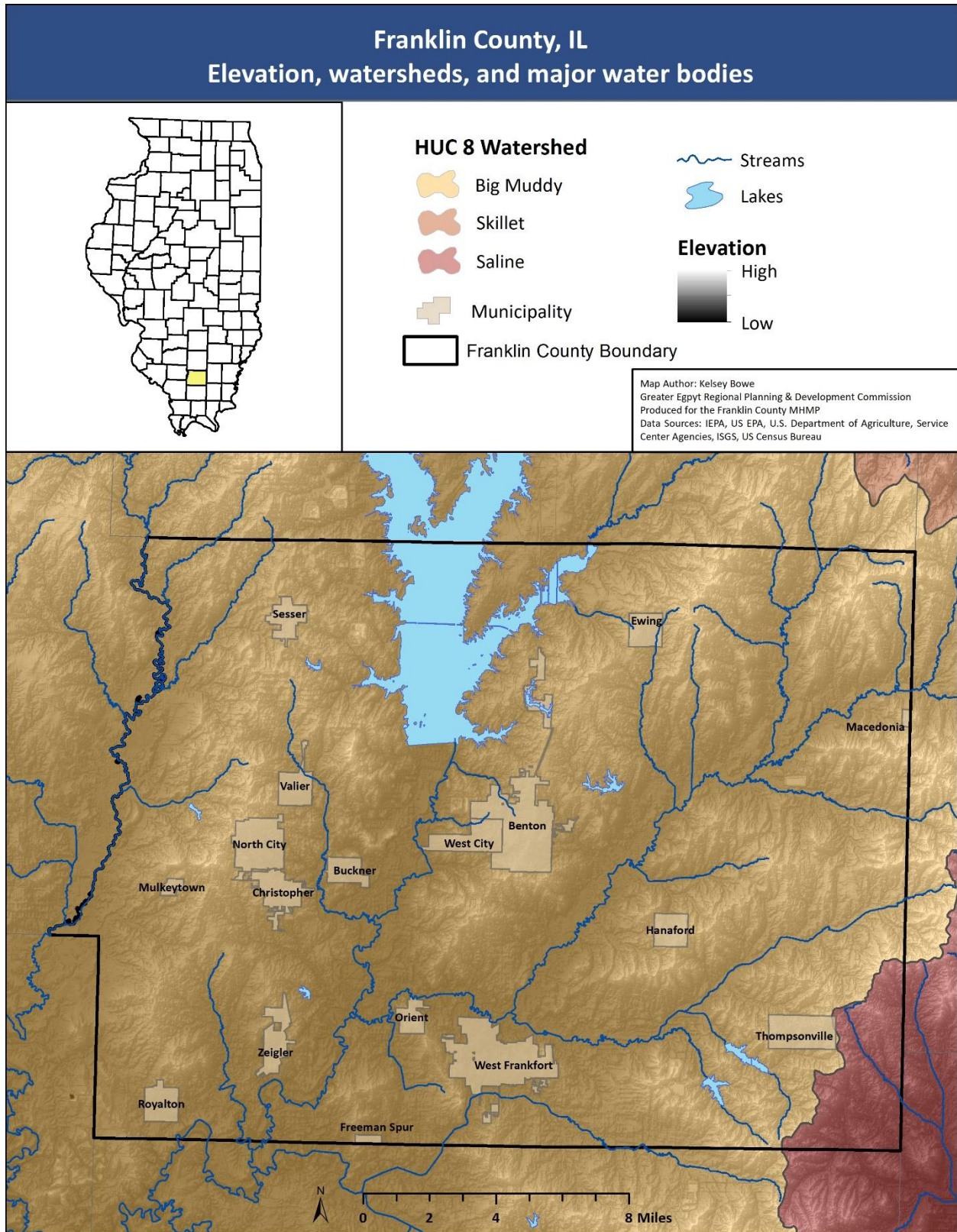


Figure 3.5



## 4. Hazard Descriptions and Risk Assessments

### 4.1. Introduction

The following section will contain hazard definitions, examples of potential extent and impacts that may occur, details on historic occurrences within Franklin County, and relevant maps and figures. When possible, all historic occurrences encompass hazard events from 1950-2021, but some databases may be missing records.

#### 4.1.1. Relevant FEMA definitions

Hazard Extent: Strength or magnitude of hazard. Can be measured on scientific scales (Tornado EF Scale, Palmer drought severity index, etc.), measurements of the hazard (flood height, snow depth, etc.), or other factors such as duration and speed of onset.

Hazard Impacts: Consequences/effects of the hazard on a community and its assets. Examples include number of injuries/deaths, dollar amount of property/crop damage, number of days without power, etc.

Essential and Critical Facilities: The FEMA Hazus Software designates important facilities and infrastructure into two categories, which will be used throughout the plan:

#### **Essential:**

- Emergency Operations Centers
- Police stations
- Fire stations
- Schools
- Hospitals

#### **Critical:**

- Transportation – Airports, train & bus stations, ports, highways, railways, and bridges
- Utilities – wastewater treatment, potable water storage, water/sewer lines, gas pipelines, power plants (does not include power lines)
- Communication - TV & Radio Stations
- Dams\*
- Military Facilities\*
- User Defined\*\*

\*While Hazus has designated space for dams and military spaces, they are not currently part of the default datasets provided and were therefore not included in the hazard models.

\*\*The user defined category is space for a community to input their own structures into Hazus, the Franklin County Planning Team included ambulance stations and in this category.



A complete list of Franklin County’s essential and critical facility data can be found in Appendix 2.

#### 4.1.2. Emerging Hazard – Climate Change

Global average temperature has increased by 1.8°F from 1901 to 2016. Evidence consistently points to human related activities, mainly greenhouse gas emissions, as the cause<sup>4</sup>. Climate change is no longer a future problem as effects are being felt in the present time around the world, and events and trends associated with climate change are only expected to continue to increase in number of events and in severity<sup>5</sup>.

Our planet is a complex system of natural ecosystems and human infrastructure, and climate change can drive many different outcomes within a small area. In the Midwest, climate change is driving more dramatic shifts in seasonal hydrologic regimes. Areas are experiencing severe storms, floods, and extreme heat waves within generally short time periods. All of these factors can decrease infrastructure stability, agriculture productivity, water and air quality, and general community resiliency to natural hazards. Southern Illinois currently encompasses regions within Köppen-Geiger climate types Dfa (hot-summer humid continental) and Cfa (humid subtropical), but future models suggest most of the state will be classified as Cfa by 2071<sup>6</sup>. Figures 4.1 and 4.2 show the Köppen-Geiger climate classifications of Illinois and surrounding areas for present day (based on data from 1980-2016) and projected climate types for the future (based on 32 different climate models for years 2071-2100).

Illinois joined the U.S. Climate Alliance in January 2019. This is a bipartisan coalition of 24 governors with commitment to implementing policies that advance the goals the Paris Agreement, track and report progress of each state to the global community, and advance new and existing policies to promote clean energy and reduce carbon pollution.<sup>7</sup>

This Multi-Hazard Mitigation Plan will contain a sub section within each chapter, when relevant, to discuss the risks associated with climate change related increases of the specific hazard.

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<sup>4</sup> Hayhoe, K. et al., 2018: Our Changing Climate. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II U.S. Global Change Research Program, Washington, DC, USA, pp. 72–144.

<sup>5</sup> Gray, E. and Merzdorf J. “Earth’s Freshwater Future: Extreme Floods and Drought”, NASA Global Climate Change, 2019.

<sup>6</sup> Beck, H.E., N.E. Zimmermann, T.R. McVicar, N. Vergopolan, A. Berg, E.F. Wood: Present and future Köppen-Geiger climate classification maps at 1-km resolution, Scientific Data 5:180214, doi:10.1038/sdata.2018.214 (2018).

<sup>7</sup> Igusky, K., “Illinois Governor J. B. Pritzker Joins U.S. Climate Alliance”, United States Climate Alliance, 2019.

Table 4.1: Key to the Köppen-Geiger climate classifications

1: Af	Tropical, rainforest
2: Am	Tropical, monsoon
3: Aw	Tropical, savannah
4: BWh	Arid, desert, hot
5: BWk	Arid, desert, cold
6: BSh	Arid, steppe, hot
7: BSk	Arid, steppe, cold
8: Csa	Temperate, dry summer, hot summer
9: Csb	Temperate, dry summer, warm summer
10: Csc	Temperate, dry summer, cold summer
11: Cwa	Temperate, dry winter, hot summer
12: Cwb	Temperate, dry winter, warm summer
13: Cwc	Temperate, dry winter, cold summer
14: Cfa	Temperate, no dry season, hot summer
15: Cfb	Temperate, no dry season, warm summer
16: Cfc	Temperate, no dry season, cold summer
17: Dsa	Cold, dry summer, hot summer
18: Dsb	Cold, dry summer, warm summer
19: Dsc	Cold, dry summer, cold summer
20: Dsd	Cold, dry summer, very cold winter
21: Dwa	Cold, dry winter, hot summer
22: Dwb	Cold, dry winter, warm summer
23: Dwc	Cold, dry winter, cold summer
24: Dwd	Cold, dry winter, very cold winter
25: Dfa	Cold, no dry season, hot summer
26: Dfb	Cold, no dry season, warm summer
27: Dfc	Cold, no dry season, cold summer
28: Dfd	Cold, no dry season, very cold winter
29: ET	Polar, tundra
30: EF	Polar, frost

Figure 4.1

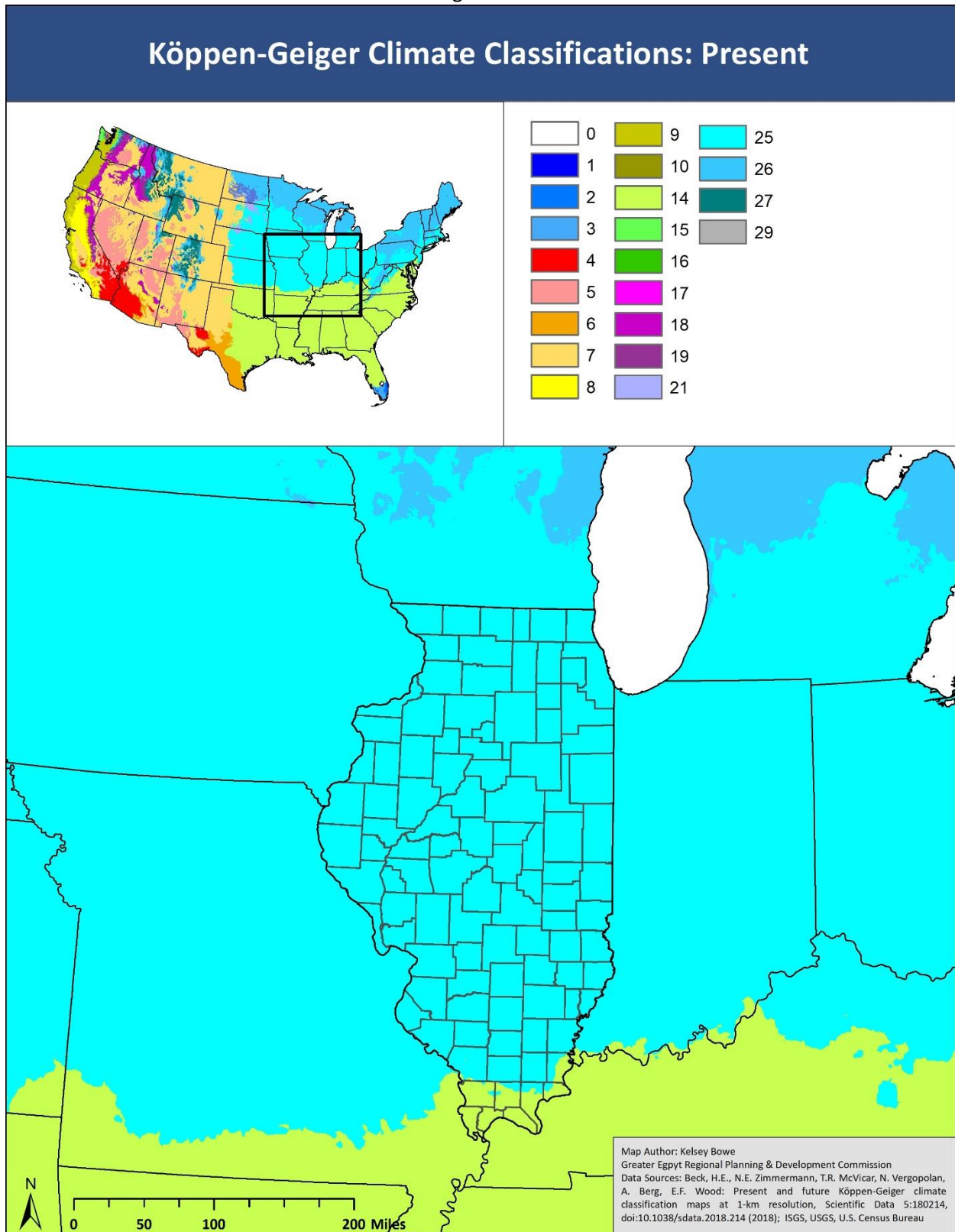
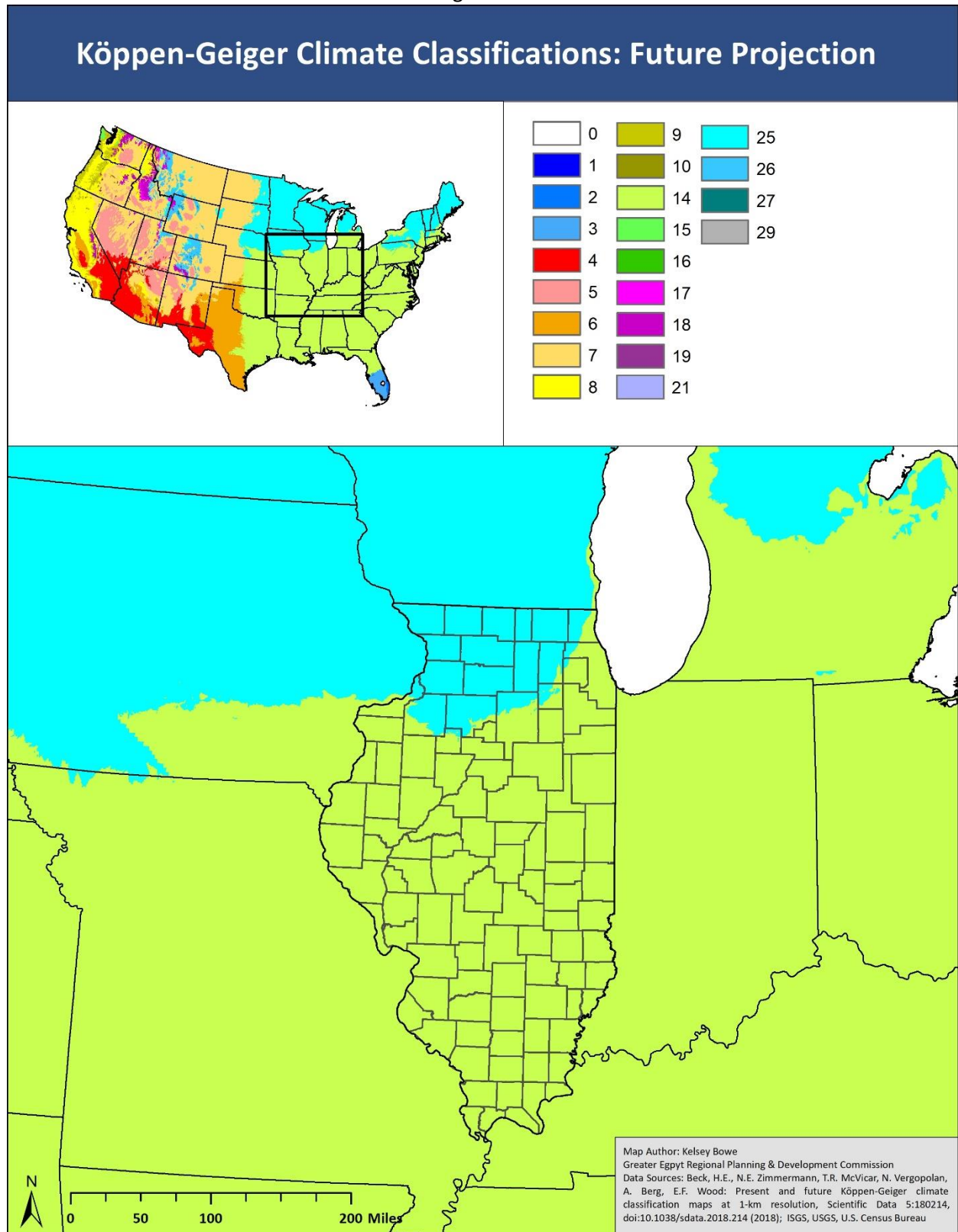


Figure 4.2



#### 4.1.3. Franklin County Hazard Rankings

Hazards were ranked using the risk priority index equation:

$$\text{Risk Index} = \text{probability} * \text{severity}$$

Where probability is how likely a hazard event will occur on a scale of 1-4:

Table 4.2

Probability	Characteristics
4 – Highly Likely	Event is probable within the next calendar year. These events have occurred, on average, once every 1-2 years in the past.
3 – Likely	Event is probable within the next 10 years. Event has a 10-15% chance of occurring in any given year. These events have occurred, on average, once every 3-10 years in the past.
2 – Possible	Event is probable within the next 50 years. Event has a 2-10% chance of occurring in any given year. These events have occurred, on average, once every 10-50 years in the past.
1 – Unlikely	Event is probable within the next 200 years. Event has a 0.5-2% chance of occurring in any given year. These events have occurred, on average, once every 50-200 years in the past.

Severity is the degree to which a hazard will cause injuries/deaths, affect functionality of essential and critical facilities, and cause property damage and/or utility disruptions on a scale of 2-8:

Table 4.3

Severity	Characteristics
8 – Catastrophic	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 – Critical	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 – Limited	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 – Negligible	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

Hazards were then ranked in order of highest to lowest risk index; weighted by how many jurisdictions included the hazard in their list.

The Franklin County Planning Team members completed a hazard ranking exercise. The County hazard list is as follows:

1. Tornados & Derechos
2. Earthquakes
3. Disease Outbreak, Epidemics, & Pandemics
4. Hazardous Materials Release
5. Severe Winter Weather
6. Ground Failure (mine subsidence)
7. Severe Thunderstorms
8. Flooding
9. Dam & Levee Failure
10. Drought & Excessive Heat
11. Terrorism
12. Wildland Fires
13. Cyberattack
14. Near Earth Object impact (asteroid, comet, meteoroid)
15. Utility Disruptions & Power Outages
16. Landslides
17. Invasive Species & Infestations

Hazard rankings by jurisdiction can be found in appendix 3.

#### 4.1.4. Disaster Declarations

Covid-19 was declared a nationwide emergency on March 13, 2020 by President Trump, pursuant to section 501(b) of the Stafford Act, this declaration removed the need for individual governors to apply. All 50 states and five territories were covered under this initial declaration, on February 2, 2021 and March 29, 2021, the Navajo nation and Poarch Band of Creek Indians were also approved for Coronavirus Disease-19 (COVID-19) disaster declarations under President Biden.

No other disaster declarations have been made for Franklin County, Illinois from 2016-2021.

## 4.2. TORNADOS AND DERECHOS

### 4.2.1. Hazard Description

Tornados are violently rotating columns attached to the base of a cloud and extend to the ground. Tornados are most often produced at the trailing end of strong supercell thunderstorm systems; though the process of tornado formation is not fully understood<sup>8</sup>. Tornadoes can be brutally destructive when they move through densely populated areas. Severe tornados can reach winds speeds in excess of 300mph and cause paths of destruction 1 mile wide and more than 50 miles long. Due to the power of the rotating winds, buildings and human life are at great risk during a strong tornado.

Tornado intensity is measured on the Enhanced Fujita (EF) Scale (adopted by the National Weather Service (NWS) in 2007). EF rating is determined by the 3-second wind gust speed (table 4.4). It is important to note these speeds are estimates based on observations from the point of damage after the tornado has passed and are not direct measurements of wind speed. The NWS service uses 28 Damage Indicators (DI) (Table 4.5) on a scale of Degrees of Damage (DOD) to estimate expected, lower, and upper bounds of wind gusts that occurred<sup>9</sup>. The NWS has specific DOD scales for each type of DI and is the only agency with authority to give official EF ratings of tornado events. The scale ranges from EF0, characterized by wind gusts of up to 85 mph with light damage to buildings, to EF5 which is characterized by catastrophic damage and wind gusts over 200 mph.

Derechos are long-lived wind storms continuing in one direction, usually over large areas. To be classified as a derecho, the storm must extend for over 240 miles and reach wind gusts of 58mph<sup>10</sup>. Derechos are a unique weather phenomenon that almost exclusively occur in the eastern United States. They are also seasonal storms, with 70% occurring between May and August<sup>6</sup>. Both tornados and derechos develop from, and are associated with thunderstorms.

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<sup>8</sup> "Severe weather 101," The National Severe Storms Laboratory, [nssl.noaa.gov](https://nssl.noaa.gov).

<sup>9</sup> "A Recommendation for an Enhanced Fujita Scale (EF-scale) Submitted to the National Weather Service and Other Interested Users," WIND SCIENCE AND ENGINEERING CENTER, Texas Tech University, 2004.

<sup>10</sup> "Derecho" National Weather Service

Table 4.4 - Enhanced Fujita Tornado Rating

Enhanced Fujita Number	3-Second Gust Speed (mph)	Selected Degrees of Damage Descriptions
0 Gale	65-85	Loss of <20% roofing material, loss of siding. Loss of rooftop HVAC.
1 Moderate	86-110	Broken glass, loss of >20% roofing material. Manufactured homes overturn but remain intact. Collapse of exterior walls of many types of building. Broken wood electrical poles. Trees uprooted or snapped.
2 Significant	111-135	Houses shift off foundations, collapse of roofs. Manufactured homes destroyed. Collapse of exterior walls of many types of building. Complete destruction of some isolated buildings. Bent or broken steel and concrete electrical poles. Trees snapped and debarked.
3 Severe	136-165	Top floor exterior and interior walls may collapse. Collapse of rigid frames in metal buildings. Damage to wall cladding and roof slabs of institutional buildings (hospitals, courthouses).
4 Devastating	166-200	Collapse of most walls, total destruction of residential houses. Destruction of large buildings such as shopping malls. Significant damage to institutional buildings.
5 Incredible	Over 200	Total destruction of residential houses, destruction of large buildings such as shopping malls. Significant damage to institutional buildings.

Source: National Weather Service/National Oceanic and Atmospheric Administration



Table 4.5 - Damage Indicators used to determine EF tornado rating

DI Number	Damage Indicator
1	Small Barns or Farm Outbuildings (SBO)
2	One- or Two-Family Residences (FR12)
3	Manufactured Home – Single Wide (MHSW)
4	Manufactured Home – Double Wide (MHDW)
5	Apartments, Condos, Townhouses [3 stories or less] (ACT)
6	Motel (M)
7	Masonry Apartment or Motel Building (MAM)
8	Small Retail Building [Fast Food Restaurants] (SRB)
9	Small Professional Building [Doctor's Office, Branch Banks] (SPB)
10	Strip Mall (SM)
11	Large Shopping Mall (LSM)
12	Large, Isolated Retail Building [K-Mart, Wal-Mart] (LIRB)
13	Automobile Showroom (ASR)
14	Automobile Service Building (ASB)
15	Elementary School [Single Story; Interior or Exterior Hallways] (ES)
16	Junior or Senior High School (JHSH)
17	Low-Rise Building [1-4 Stories] (LRB)
18	Mid-Rise Building [5-20 Stories] (MRB)
19	High-Rise Building [More than 20 Stories] (HRB)
20	Institutional Building [Hospital, Government or University Building] (IB)
21	Metal Building System (MBS)
22	Service Station Canopy (SSC)
23	Warehouse Building [Tilt-up Walls or Heavy-Timber Construction](WHB)
24	Transmission Line Towers (TLT)
25	Free-Standing Towers (FST)
26	Free-Standing Light Poles, Luminary Poles, Flag Poles (FSP)
27	Trees: Hardwood (TH)
28	Trees: Softwood (TS)

Source: National Weather Service/National Oceanic and Atmospheric Administration

Table 4.6 Average path size of tornados, based on all tornados reported in the United States from 2007-

Enhanced Fujita Number	Average Path Length (miles)	Average Patch Width (feet)
0	1.41	180.12
1	4.41	537.40
2	8.88	1128.94
3	18.08	2415.68
4	32.65	3273.95
5	44.71	5366.79

2013<sup>11</sup>

#### 4.2.2. Geographic Location and Historical Occurrences

Southern Illinois is sometimes included in definitions of “Tornado Alley” and “Dixie Alley”, although the terms have no official boundaries and generally refer to the Southcentral and Southeast portions of the U.S. respectively. Both geographic areas have the highest frequency of tornados in the U.S. The infamous Tri-State Tornado of 1925 was one of the worst recorded tornados in the history of the Midwest. It went through Franklin County and others in Illinois on its path from Missouri to Indiana. A rare weather event, the Tri-State Tornado had a path length of 219 miles and a width of  $\frac{3}{4}$  mile. It continued for an estimated 3  $\frac{1}{2}$  hours, and was an F5 on the Fujita scale. This event was the most destructive single tornado in United States history: 695 lives were lost, 2,027 were injured, and 15,000 homes were destroyed.

On May 29, 1982 an F3 tornado travelled through Perry County in southern Illinois, injuring 6 and destroying 9 homes in Conant<sup>12</sup>. An F4 tornado went through Williamson County, IL the same day- killing 10, injuring 181, and damaging 500 homes and 82 businesses<sup>13</sup>. The path in Williamson County was 17 miles long and nearly  $\frac{1}{4}$  mile wide<sup>14</sup>.

On December 11-12, 2021, a supercell thunderstorm travelled over 350 miles through Arkansas, Missouri, Tennessee, and Kentucky. 66 Tornados have been confirmed from this storm event, including an EF4 from Craighead County Arkansas to Obion County Tennessee with a path length of 80.3 miles and a max width of 5,249ft, and a second EF4 from Fulton County to Breckenridge County in Kentucky, with a path length of 165.7 miles and a max width of 7,874ft<sup>15</sup>. One EF3 and five EF2 tornados occurred in Illinois from this event; none occurred in Franklin County. 89 deaths and nearly \$4 billion in damages occurred across all of the states that were impacted<sup>16</sup>.

<sup>11</sup> Elsner, James B et al. “Tornado intensity estimated from damage path dimensions.” PloS one vol. 9,9 e107571. 17 Sep. 2014

<sup>12</sup> Koplowitz, H.B., The Southern Illinoisian, “9 of 11 Conant homes ruined” June 1, 1982.

<sup>13</sup> Staff Writers, The Southern Illinoisian, “Marion counts loss, plans future” June 1, 1982.

<sup>14</sup> National Weather Service, “1982 Marion Illinois Tornado”.

<sup>15</sup> National Weather Service, “NWS Storm Damage Summaries - Dec 10-11, 2021 Tornado Outbreak”.

<sup>16</sup> Wikipedia, “Tornado outbreak of December 10–11, 2021”.

There have been two major derechos in Illinois in recent decades; one in May of 2009 in southern Missouri and Illinois, and one in 2020 that went through Nebraska, Iowa, northern Illinois and northern Indiana. The 2009 derecho had recorded wind speeds of 120mph in Murphysboro (Jackson County, IL). Many power outages occurred and there was 1 death from the storm<sup>17</sup>. In 2020 an estimated 850,000 acres of crops were damaged and 2 people were killed in Iowa. In Illinois alone 750,000 homes lost power<sup>18</sup>.

There have been 17 recorded tornados in Franklin County, IL (NOAA storm events database from 1950 to Jan 31 2021), with 11 of those causing death, injuries, and/or property damage (table 4.7).

Table 4.7 - Tornados that have caused death, injury, or property damage in Franklin County, IL.

Date	Location	Rating	Deaths	Injuries	Property Damage
12/18/1957	Not listed	F4	0	10	\$2.500M
2/9/1960	Not listed	F2	0	0	\$2550.00K
4/27/1971	Not listed	F3	1	20	\$2.500M
4/27/1994	West Frankfort	F1	0	1	\$500.00K
4/19/1996	Mulkeytown	F1	0	0	\$20.00K
11/10/2002	Royalton	F0	0	0	\$1.00K
6/8/2009	Mulkeytown	EF1	0	0	\$6.00K
4/19/2011	Royalton	EF1	0	0	\$80.00K
4/19/2011	Benton	EF1	0	0	\$10.00K
6/19/2015	Ezra	EF1	0	0	\$500.00K
2/28/2017	Mulkeytown	EF3	0	0	\$800.00K
12/5/2021	Ezra	EF1	0	0	\$80.00K
3/30/22	Thompsonville	EF0	0	0	\$62.00K

Source: NOAA Storm Events Database

#### 4.2.3. Risk

Tornadoes and derechos can occur at any location in the county. Derechos are a seasonal weather phenomenon and typically occur during May-August. Historical tornadoes generally moved from southwest to northeast across the county, although many other tracks are possible. The extent of the hazard varies in terms of the EF rating of the tornado and location and direction of its path. Based on NOAA data, Franklin County has a 26% probability of a tornado occurring in any given year.

Structures most at risk of damage in the event of tornados include mobile and manufactured homes, unreinforced masonry structures, and facilities without storm window retrofits. Any homes and facilities constructed before building codes were widely enforced (pre-1970s) are

<sup>17</sup> The Southern Illinoian

<sup>18</sup> Foley and Funk, "Derecho leaves 2 dead, heavy crop damage across Midwest", The Southern Illinoian, 8.12.2020.

more at risk for wind damage. The 2018 International Building Code (IBC) has wind load and impact resistance requirements for window installations specific for geographic area. The State of Illinois has not adopted statewide building code requirements<sup>19</sup>. Franklin County has also not adopted any building codes; some individual municipalities do have building code enforcements, see section 5.2 for all hazard related codes and ordinances.

#### 4.2.4. Climate Change

2021 had an above average number of tornados recorded, with December having a record-breaking number of 193 tornados across the United States<sup>20</sup>. National average tornado frequency has remained relatively constant, but the spatial distribution has been shifting; with positive trends in the Midwest and Southeast, and negative trends in the Great Plains region<sup>21</sup>. The Eastern U.S. is expected to see an increase in days with favorable conditions for severe thunderstorms with the changing climate, which could also lead to an increased risk of tornado occurrence<sup>22</sup>.

#### 4.2.5. Hazard Model

ArcGIS was used to simulate an EF4 tornado in Franklin County, IL. A hypothetical path was created with a polyline from the county edge near Willisville heading northeast through Pinckneyville and Tamaroa. From the tornado path, four damage zones were created using the multiple ring buffer tool (table 4.8).

Table 4.8 - Buffer zones and damage estimates used for the EF4 tornado model

Zone	Buffer (feet)	Bridges & hospital damage	All other building damage
1	500	75%	100%
2	1000	50%	80%
3	2150	25%	50%
4	3300	5%	10%

Essential and critical facilities and infrastructure data comes from the Hazus Illinois State dataset and from local planning partner knowledge. Residential parcel data is from the Franklin County Assessor's Office. Railroad bridges, highway bridges, and hospitals have lower damage

<sup>19</sup> "Building Codes and Regulations", Capital Development Board, Illinois.gov.

<sup>20</sup> NOAA, "Contiguous U.S. ranked fourth warmest during 2021; 20 billion-dollar disasters identified", January 10, 2022.

<sup>21</sup> Gensini, V.A. and Brooks, H.E., Nature, "Spatial trends in United States tornado frequency", 2018.

<sup>22</sup> NASA - Global Climate Change, "Severe thunderstorms and climate change", April 7, 2013.

percentages since they are generally designed to withstand severe weather better than other infrastructure and buildings.

Figure 4.3 shows the simulated tornado path for Franklin County. Figure 4.4 shows the path in detail through West City and Benton. Table 4.9 shows the total damage cost estimates and tables 4.10 -4.13 shows the results and damage cost estimates for each buffer zone.

Table 4.9 – Total Damage Cost Estimates for EF4 Tornado Model

Total		
Category	# Damaged	Total Cost of Damage
highway bridges	42	13,205,842.17
railroad bridges	8	16,469,558.91
residential buildings	2775	NA
essential facilities	10	23,988,101.33
TOTAL		53,663,502.41

Figure 4.3

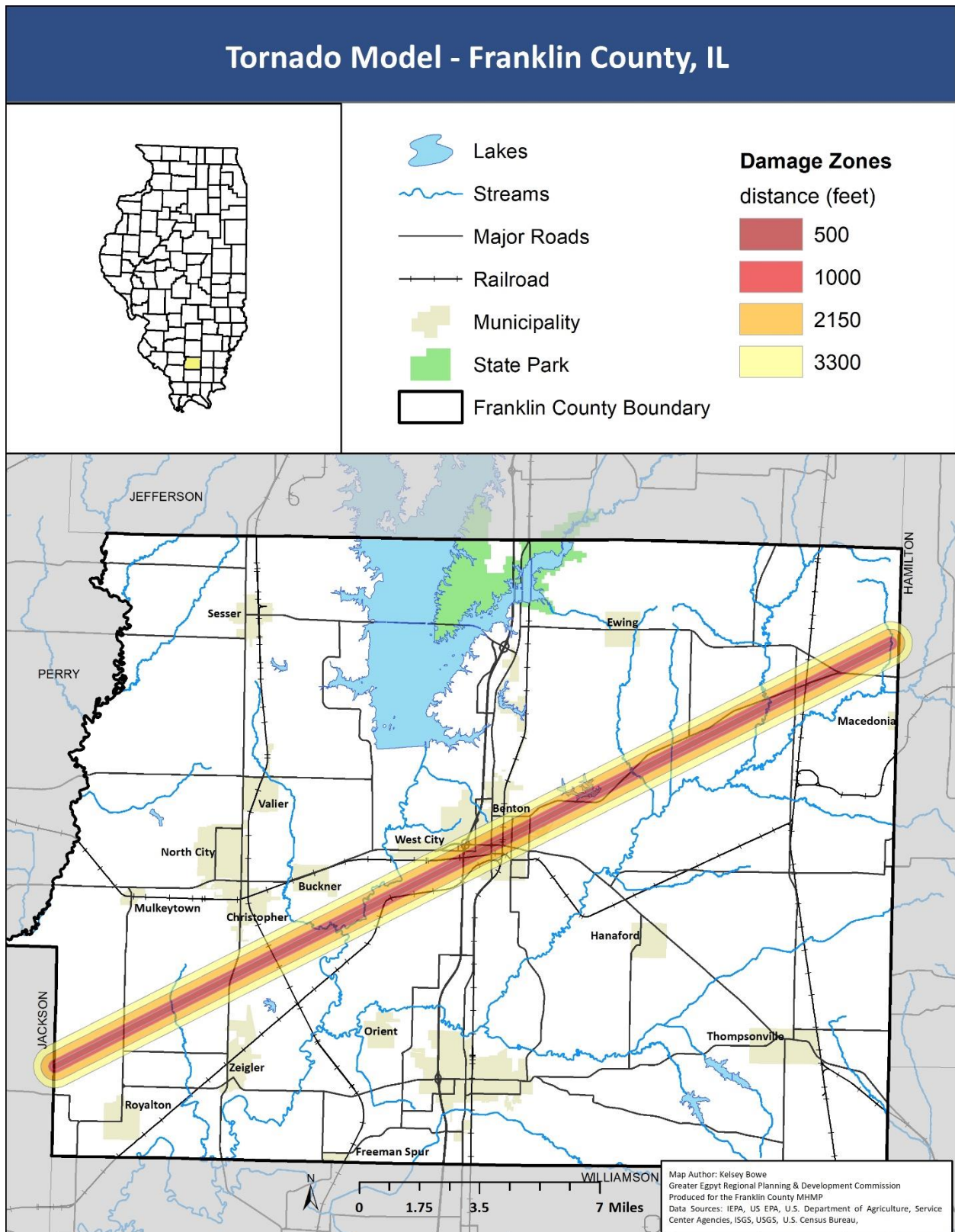




Figure 4.4

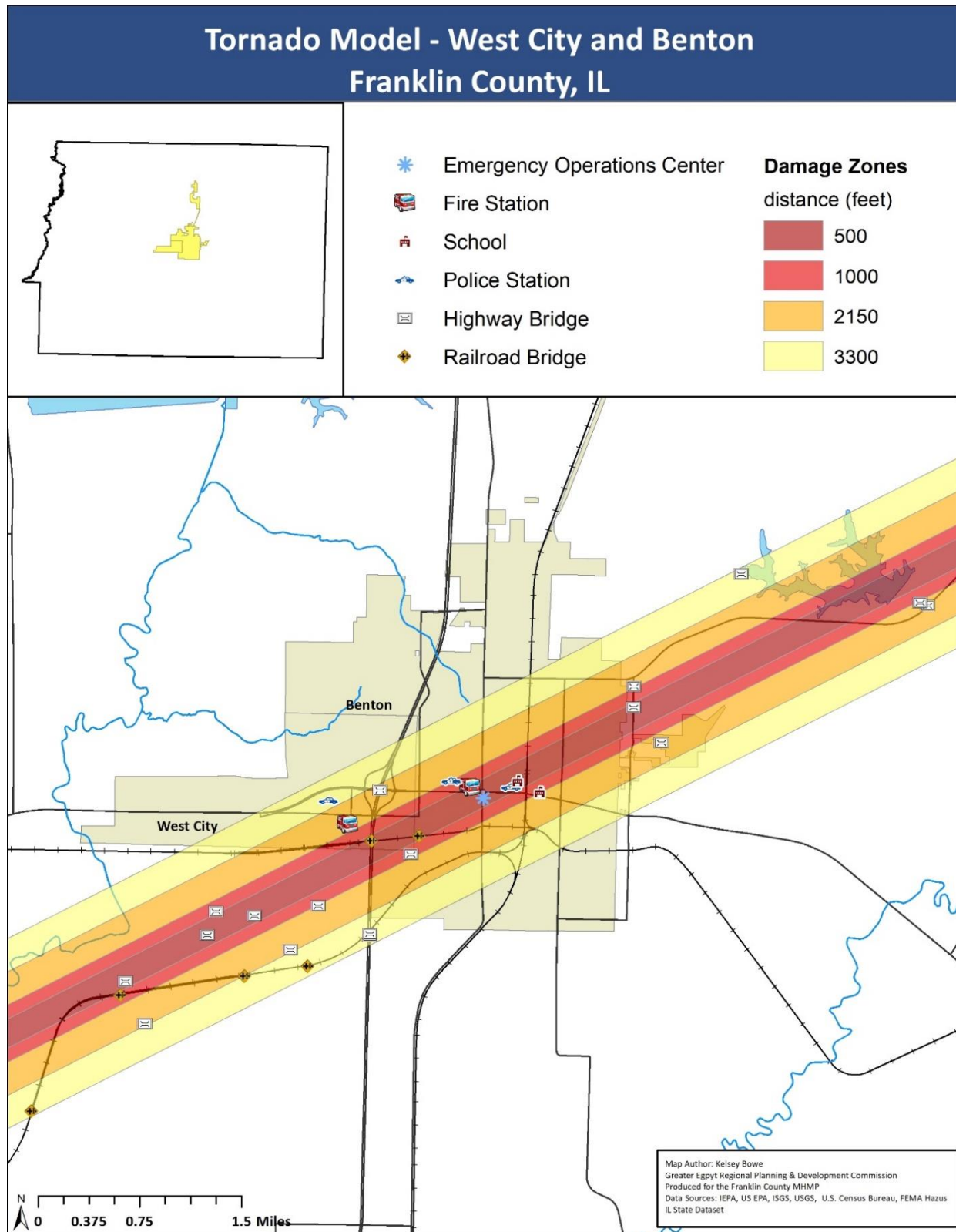


Table 4.10

Zone 1		
Category	# Damaged	Total Cost of Damage
highway bridges	9	3,089,998.43
railroad bridges	3	11,763,970.65
residential buildings	466	NA
Juvenile Detention Center		259,238.59
Franklin County EOC		2,795,300.29
Benton Fire Department		2,795,300.29
Franklin County Sheriff's Office		2,795,300.29

Table 4.11

Zone 2		
Category	# Damaged	Total Cost of Damage
highway bridges	7	4,095,613.85
railroad bridges	1	2,614,215.70
residential buildings	398	NA
Benton Consolidated High School		7,051,289.85
Zeigler-Royalton High School		2,073,908.59
Benton Police Department		2,236,240.23

Table 4.12

Zone 3		
Category	# Damaged	Total Cost of Damage
highway bridges	17	4,934,693.53
railroad bridges	1	1,307,107.85
residential buildings	1059	NA
Zeigler-Royalton K-8 School		2,304,343.02
West City Fire Department		1,397,650.15

Table 4.13

Zone 4		
Category	# Damaged	Total Cost of Damage
highway bridges	9	1,085,536.36
railroad bridges	3	784,264.71
residential buildings	852	NA
West City Police Department		279,530.03



## 4.3. Earthquakes

### 4.3.1. Hazard Description

Earthquakes occur when seismic energy in the earth's crust is quickly released, often due to large blocks of crust fracturing or slipping past one another. Tectonic earthquakes often occur along major geologic fault lines. However, earthquakes can also occur in the interior of major plates due to weaknesses in the crust or other factors.

Effects of earthquakes can include perceptible ground shaking, surface faulting, and ground failure. In general, ground shaking will be more vigorous as earthquake magnitude increases. Ground shaking can cause massive damage to buildings and infrastructure; though the amount of damage depends also on soil properties, building specifications, distance from the epicenter, and other factors. Surface faulting, classified as strike-slip, normal, or reverse/thrust, causes displacement of the earth's crust at the surface. This usually leads to a long, narrow zone of displacement, which can be catastrophic to buildings and infrastructure. However, these zones are often quite narrow and impact small areas if they do occur. Ground failure can be induced by liquefaction which is a phenomenon where coarse soils, comprised mainly of silts or sands, act as a liquid due to the seismic shear waves produced by the earthquake. Liquefaction can cause lateral spreads, flow failures, loss of bearing strength, and sand boils – all of which can be destructive to the built environment<sup>23</sup>.

The impacts of large earthquakes on more densely populated areas can be severe. Buildings and major infrastructure may collapse, roadways may be impassable due to debris or road failure, and essential facilities may be damaged or unreachable. Injury and loss of life are also possible during an earthquake – often the result of building collapse or falling debris. Due to the possible crippling of transportation and essential facilities, pre-hazard contingency planning is crucial for adequate emergency response in the event of an earthquake.

Earthquakes are measured by intensity, magnitude and energy release. Intensity describes the effects of the earthquake at the surface. Intensity is measured by the Modified Mercalli Intensity Scale (figure 4.5) which ranges from I – XII, where “I” describes an earthquake almost imperceptible to people and “XII” describes extreme damage to the built and natural environments at the surface. Magnitude is a measurement of the physical size of the earthquake, calculated by multiplying the length, width, and slip. Slip is the displacement of the fault. Energy release is a measure of all frequencies of shaking produced for the duration of an earthquake and is estimated using a logarithmic conversion of the magnitude. Magnitude is measured by a logarithmic scale - an increase of a whole number on the magnitude scale represents a tenfold increase in amplitude and 32 times more energy release<sup>24</sup>.

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<sup>23</sup> Hays, W.W., ed., 1981, Facing Geologic and Hydrologic Hazards - Earth Science Considerations: U.S. Geological Survey Professional Paper

<sup>24</sup> “Earthquake Magnitude, Energy Release, and Shaking Intensity”, Earthquake Hazards, USGS.

Figure 4.5

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: U.S. Geological Survey (USGS)

#### 4.3.2. Geographic Location and Historical Occurrences

Southern Illinois lies in the northwest region of the New Madrid Seismic Zone (NMSZ). This zone covers areas of Arkansas, Missouri, Mississippi, Tennessee, Kentucky, and Illinois (figure 4.6) and is characterized by a group of faults deeply buried by river sediment. The geology associated with the New Madrid Seismic zone is known as the Mississippi Embayment. This is underlain by Reelfoot Rift, a deep continental rift system formed roughly 600 million years ago, and by Paleozoic sedimentary rock formed around 570 million years ago. The upper layers of the Mississippi Embayment include marine sedimentary rock from 50-100 million years ago, and even more recently river sediments from 5 million to 60,000 years ago<sup>25</sup>.

Historic data suggests that magnitude 7-8 earthquakes have occurred in the NMSZ roughly every 500 years since 900 CE. The worst recorded series of earthquakes occurred in 1811-1812. 3 large earthquakes occurred in December 1811, and January and February of 1812, with hundreds of aftershocks felt throughout the year and into 1813. The epicenter of the third earthquake occurred near and destroyed the town of New Madrid, Missouri. Other damage from the earthquakes and aftershocks included bank failure along the Mississippi River,

<sup>25</sup> "The New Madrid Seismic Zone", Earthquake Hazards, USGS.

landsides of surrounding bluffs, uplift and subsidence of large areas, and liquefaction of subsurface sediment- resulting in sand blows that covers thousands of square kilometers. Sections of the Mississippi River are reported to have flown backwards temporarily as a result of uplift.

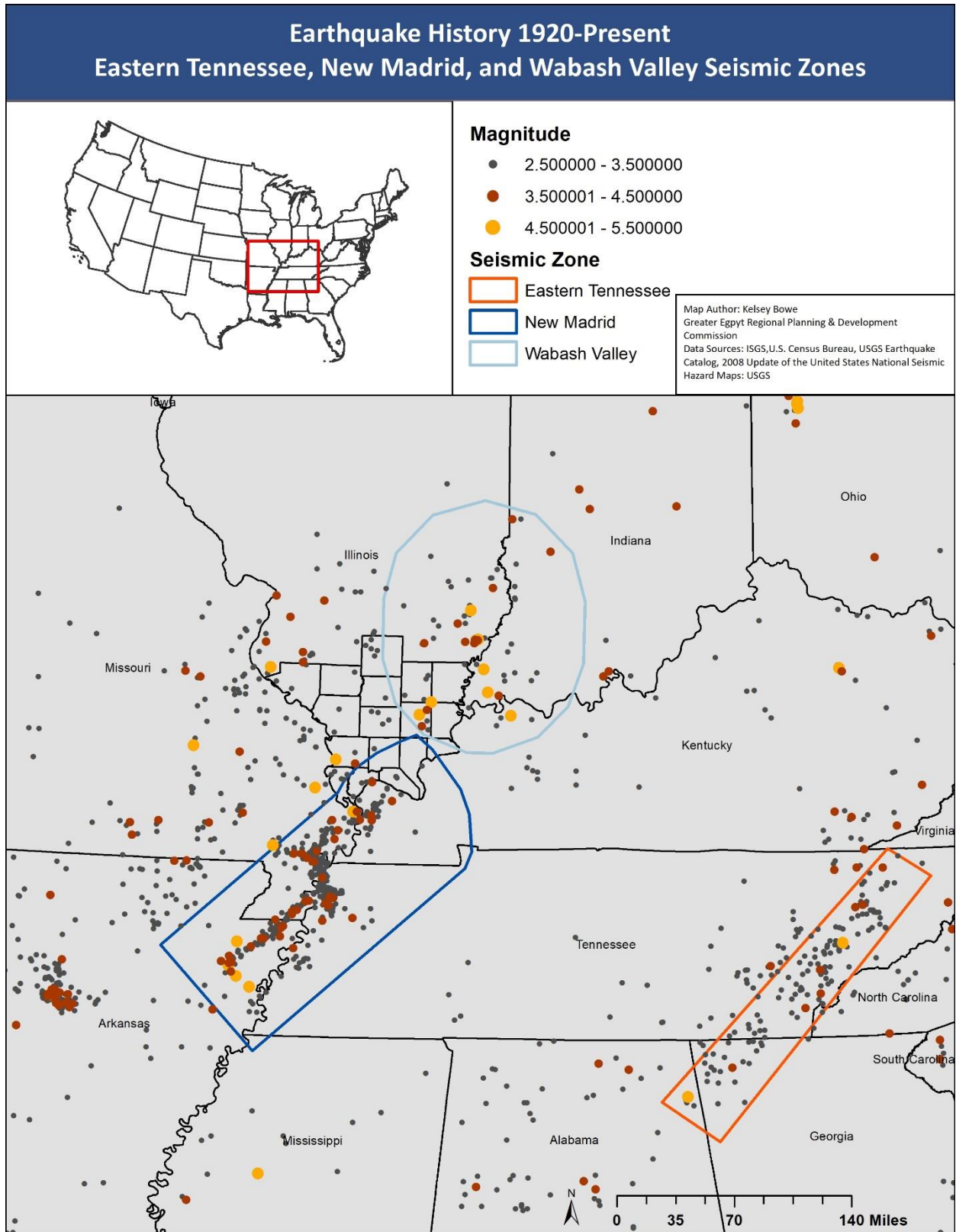
The Wabash Valley Seismic Zone (WVSZ) occurs around the conjunction of Kentucky, Indiana, and Illinois and may impact seismic activity of southern Illinois counties including Franklin. Although a smaller region than New Madrid, it is estimated to be capable of magnitude 7 earthquakes. There is evidence of liquefaction sites dated at 6,100 years old, and more recently a magnitude 5.2 earthquake occurred in 2008 with an epicenter near Mt. Carmel, IL. Damage was reported from all three states in the seismic zone<sup>26</sup>. Figure 4.6 shows the seismic zones and earthquake history of southern Illinois and surrounding states.

The only recorded earthquake in Franklin County above a magnitude 2.5 occurred northeast of West Frankfort on January 23, 1991; it was a magnitude 3.1.

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<sup>26</sup> "Wabash Valley Seismic Zone", Central United States Earthquake Consortium. <https://cusec.org/wabash-valley-seismic-zone/>

Figure 4.6



#### 4.3.3. Risk

Figure 4.7 shows the most current USGS earthquake risk map. The values are expressed as a percentage of the acceleration of gravity (g). These values are a probability of 10% chance of exceeding the displayed ground acceleration within 50 years<sup>27</sup>. Franklin County has a probability of 10-15%, while the center area of the New Madrid Seismic Zone has a probability of 40%.

Areas most at risk for liquefaction and sand blows are floodplains where the water table is within five feet of the surface. The highest risk area for liquefaction is near the Little Muddy River, Figure 4.8 shows liquefaction risk for the county.

While the county has equal risk of an earthquake occurring, older buildings and infrastructure have a higher risk of damage if one occurred. Construction before international building codes were widely adopted and enforced, and facilities that have not been seismically retrofitted are more likely to be damaged. Unreinforced masonry buildings were one of the most common structures for homes and commercial buildings from settlement through the mid-late 1970s; it is also the most dangerous building types for an earthquake hazard<sup>28</sup>. The Hazus software uses the year 1973 as a threshold for earthquake related building codes. However, in the eastern U.S. they were not widely enforced until much later and it can be difficult to determine the building codes used in old facilities. The Central U.S. Earthquake Consortium (CUSEC) states that most homes in the central U.S. were not built with seismic consideration until 1990.

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<sup>27</sup> "USA Earthquake Risk", Layer Description, Map Image Layer by ESRI and USGS, ArcGIS Online.

<sup>28</sup> "Putting down roots in earthquake country- your handbook for earthquakes in the Central United States", U.S. Department of the Interior, U.S. Geological Survey, General Information Product 119.

Figure 4.7

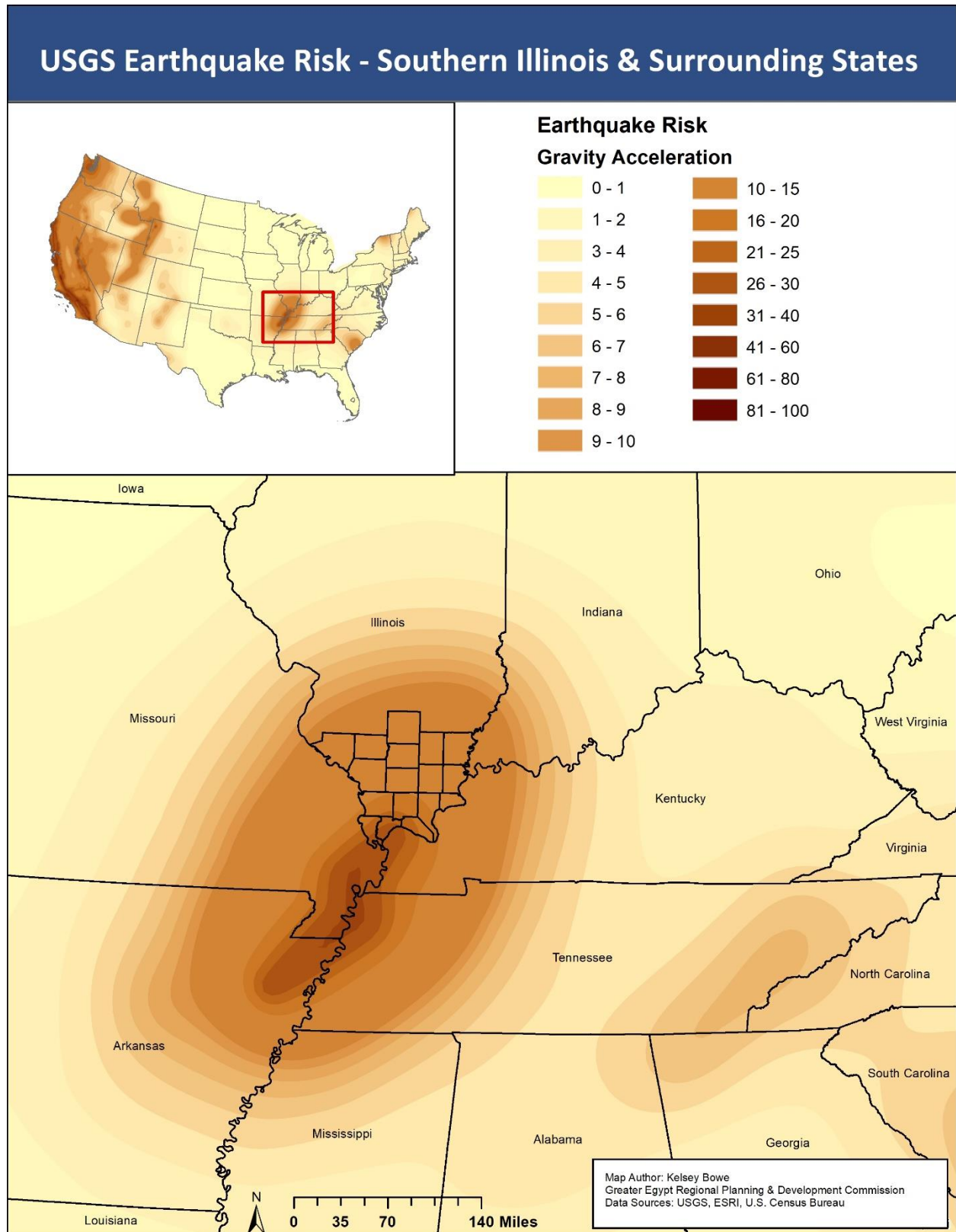
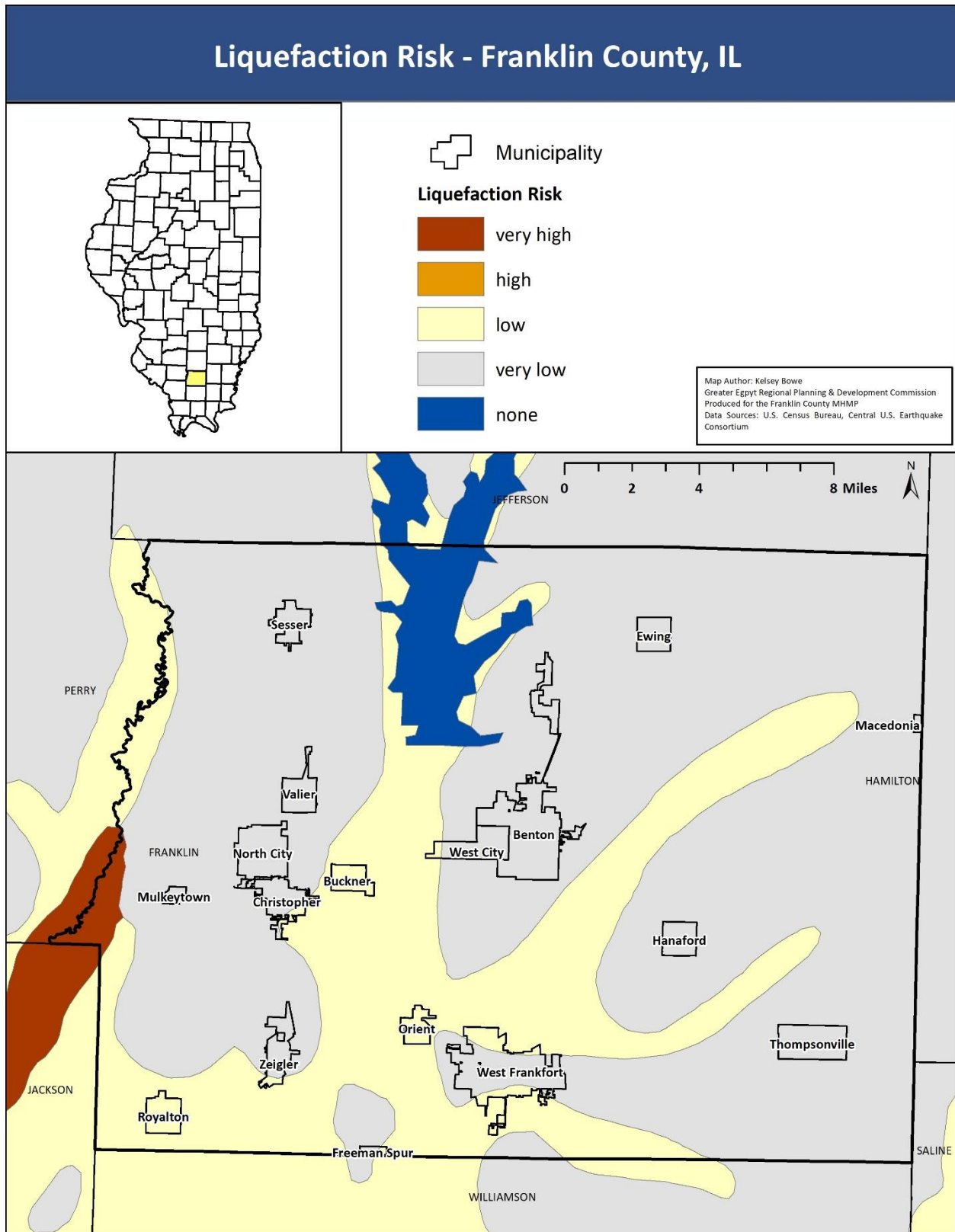




Figure 4.8



#### 4.3.4. Hazard Model

Hazus 5.1 was used to model two different scenarios for Franklin County. Hazus uses data from the 2010 U.S. Decennial Census and the 2019 Homeland Infrastructure Foundation Level Data. Census tracts, population estimates, replacement values, and other data may not reflect the most current values.

#### **Scenario 1: Magnitude 5.5 event in Franklin County**

##### **Model Parameters:**

Hazus Arbitrary Scenario - 5.5 magnitude

Depth - 10km

Latitude - 37.9818

Longitude - -88.9257

Total Households= 16,617

In this scenario, nearly 5,000 buildings are estimated to be moderately or extensively damaged, and 391 buildings are estimated to be completely damaged. Table 4.14 shows the damage estimates by occupancy type. Essential facilities with at least moderate damage include nine schools, one Emergency Operations Center, seven police stations, and five fire stations. Transportation systems with at least moderate damage include seven highway bridges and two airports. Utility systems that sustain at least moderate damage are eight wastewater treatment plants, one drinking water facility, and two communication facilities. After seven days all critical facilities are expected to be functioning at greater than 50% except for one of the water treatment plants and four highway bridges. Damage to utility pipelines and the effect on households are displayed in tables 4.15 and 4.16.

Table 4.14 – Damage Estimate by Occupancy Type

	None		Slight		Moderate		Extensive		Complete	
Occupancy Type	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	39.31	0.44	24.34	0.5	32.51	0.95	18.09	1.35	4.74	1.21
Commercial	260.45	2.94	203.27	4.16	257.86	7.55	134.08	10	43.34	11.09
Education	12.25	0.14	7.64	0.16	9.36	0.27	4.32	0.32	1.43	0.37
Government	13.96	0.16	9.64	0.2	12.86	0.38	5.65	0.42	1.89	0.48
Industrial	63.53	0.72	46.17	0.94	66.06	1.93	39.48	2.95	12.75	3.26
Other Residential	710.35	8.02	593.08	12.13	892.69	26.13	508.13	37.9	131.75	33.71
Religion	48.05	0.54	28.8	0.59	28.99	0.85	15.78	1.18	5.38	1.38
Single Family	7704.43	87.03	3975.46	81.32	2116.58	61.94	615	45.88	189.53	48.5
Total	8,852		4,888		3,417		1,341		391	



Table 4.15 – Utility Pipeline Damage Estimates

System	Total Pipeline Length (miles)	# of Leaks	# of Breaks
Potable Water	2,282	452	138
Waste Water	1,369	227	69
Natural Gas	17	0	0
Oil	0	0	0

Table 4.16 – Loss of Utility Service Estimates

Number of Households without Service					
	At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	1,384	322	0	0	0
Electric Power	10,915	6,817	2,679	476	14

Physical damage will result in an estimated 154,000 tons of debris, requiring 6,160 truckloads to remove. Building-related economic losses are displayed in table 4.17 and figure 4.9.

In addition to the building related losses, there is an estimated \$21.29 million in economic losses to the transportation sector and \$60.26 million in economic losses to utility systems. Total Economic losses are estimated to be \$552.63 million.

Table 4.17 – Building-related Economic Loss Estimates (millions of dollars)

Category	Single Family	Other Residential	Commercial	Industrial	Others	Total
<b>Income Losses</b>						
Wage	0	1.0265	16.0808	1.0307	1.3625	19.5005
Capital-Related	0	0.4374	12.5044	0.6396	0.3721	13.9535
Rental	6.4208	3.1235	6.5467	0.2928	0.7043	17.0881
Relocation	22.5777	4.7504	11.3331	1.2275	6.0223	45.911
<b>Subtotal</b>	<b>28.9985</b>	<b>9.3378</b>	<b>46.465</b>	<b>3.1906</b>	<b>8.4612</b>	<b>96.4531</b>
<b>Capital Stock Losses</b>						
Structural	34.7876	8.8567	16.0721	5.4872	7.9264	73.13
Nonstructural	138.8833	36.3202	47.2542	17.6774	21.3277	261.4628
Content	56.3403	9.7334	27.0776	12.5422	12.4281	118.1216
Inventory	0	0	0.6482	2.6608	0.1497	3.4587
<b>Subtotal</b>	<b>230.0112</b>	<b>54.9103</b>	<b>91.0521</b>	<b>38.3676</b>	<b>41.8319</b>	<b>456.1731</b>
<b>Total</b>	<b>259.01</b>	<b>64.25</b>	<b>137.52</b>	<b>41.56</b>	<b>50.29</b>	<b>552.63</b>

### *Social Impact*

The model estimates 317 households will be displaced due to the earthquake. Of those, 200 will need temporary public shelter.

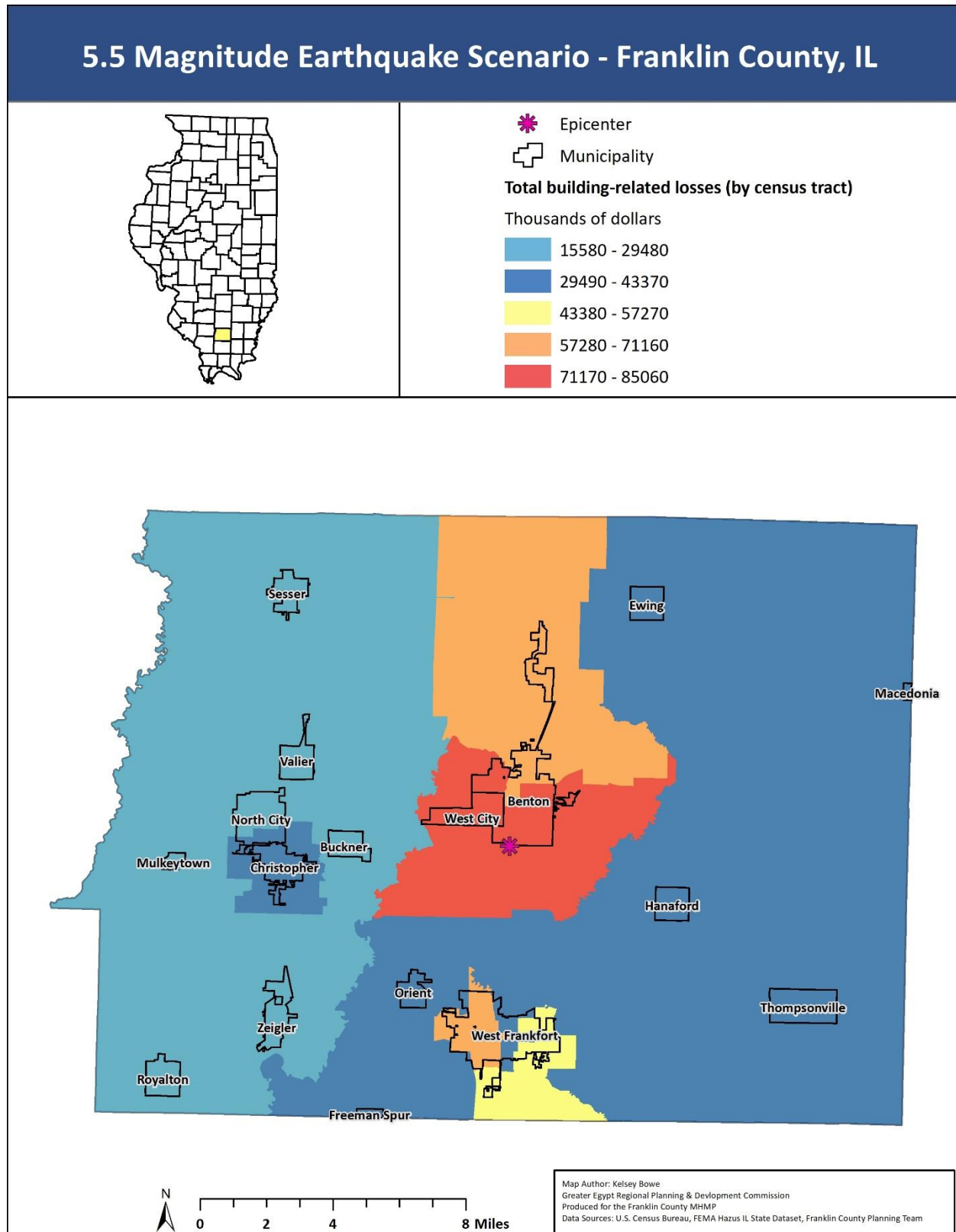
Table 4.18 displays injury and casualty estimates for 3 different occupancy load scenarios. 2:00 AM represents maximum residential occupancy load (most of population home in bed), 2:00 PM represents peak educational, commercial, and industrial occupancy (most of population at work/school), and 5:00 PM represents peak commuter occupancy. Injury severity levels are as follows:

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

Table 4.18 – Injury and Casualty Estimates

Time of Earthquake	Occupancy Type	Level 1	Level 2	Level 3	Level 4
2:00 AM	Commercial	1.95	0.47	0.06	0.12
	Commuting	0	0.01	0.01	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	2.69	0.63	0.08	0.16
	Other-Residential	38.27	7.87	0.71	1.32
	Single Family	91.37	21	2.86	5.62
	<b>Total</b>	<b>134</b>	<b>30</b>	<b>4</b>	<b>7</b>
2:00 PM	Commercial	123.8	29.69	3.99	7.72
	Commuting	0.04	0.05	0.09	0.02
	Educational	45.19	11.45	1.69	3.27
	Hotels	0	0	0	0
	Industrial	19.79	4.69	0.6	1.16
	Other-Residential	9.63	2.02	0.2	0.36
	Single Family	24.93	5.91	0.84	1.58
	<b>Total</b>	<b>223</b>	<b>54</b>	<b>7</b>	<b>14</b>
5:00 PM	Commercial	88.27	21.29	2.89	5.53
	Commuting	0.61	0.81	1.38	0.27
	Educational	2.86	0.73	0.11	0.21
	Hotels	0	0	0	0
	Industrial	12.37	2.93	0.38	0.72
	Other-Residential	14.19	2.97	0.29	0.52
	Single Family	36.64	8.69	1.24	2.32
	<b>Total</b>	<b>155</b>	<b>37</b>	<b>6</b>	<b>10</b>

Figure 4.9



## **Scenario 2: Magnitude 7.5 event in the New Madrid Seismic Zone**

### **Model Parameters:**

USGS ShakeMaps Scenario - M7.5-New Madrid central fault, version 5, bssc2014

Depth - 19.358km

Latitude - 35.83234

Longitude - -90.06303

This model estimates damages and social impacts of a magnitude 7.5 earthquake in the central fault of the NMSZ for Franklin County, Illinois. An earthquake of this magnitude would be catastrophic to the population, infrastructure, and economy of northeast Arkansas, southeast Missouri, western Kentucky, southern Illinois, and surrounding areas; even though the effects in Franklin County are expected to be mild. The Mid America Earthquake Center estimated that if a repeat of the 1811-1812 earthquakes occurred today, the NMSZ would suffer over 3,000 deaths, hundreds of hospitals could lose functionality, millions of households and businesses would lose water and electricity, and total economic losses would be in the hundreds of billions of dollars.

### **Results:**

In this scenario, less than 800 buildings are estimated to be moderately or extensively damaged, and eight buildings are estimated to be completely damaged. Table 4.19 shows the damage estimates by occupancy type. No essential facilities are estimated to be damaged. No transportation systems are estimated to be damaged. No utility facilities are estimated to be damaged, but there is some damage to pipelines. Damage to utility pipelines is displayed in table 4.20. No households are expected to lose utility services as a result of the earthquake. Hazus only estimates utility losses for the county as a single unit; it does not take into account that power grids, water lines, and other pipelines may be interconnected across multiple counties or states.

Table 4.19 – Damage Estimates by Occupancy Type

Occupancy Type	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	97.5	0.59	12.59	0.8	7.34	1.05	1.48	1.55	0.09	1.02
Commercial	741.16	4.49	97.29	6.15	49.81	7.12	10.06	10.49	0.68	8.08
Education	28.82	0.17	3.78	0.24	2.02	0.29	0.34	0.35	0.04	0.49
Government	36.2	0.22	4.79	0.3	2.6	0.37	0.37	0.38	0.05	0.54
Industrial	185.58	1.12	25.03	1.58	14.3	2.04	2.93	3.05	0.16	1.87
Other Residential	2027.22	12.28	449.7	28.44	327.32	46.77	30.4	31.68	1.37	16.28
Religion	106.77	0.65	12.35	0.78	6.44	0.92	1.31	1.37	0.12	1.42
Single Family	13280.47	80.47	975.54	61.7	290.01	41.44	49.06	51.13	5.91	70.29
<b>Total</b>	<b>16,504</b>		<b>1,581</b>		<b>700</b>		<b>96</b>		<b>8</b>	

Table 4.20 – Utility Pipeline Damage Estimates

System	Total Pipeline Length (miles)	# of Leaks	# of Breaks
Potable Water	2,282	34	8
Waste Water	1,369	17	4
Natural Gas	17	0	0
Oil	0	0	0

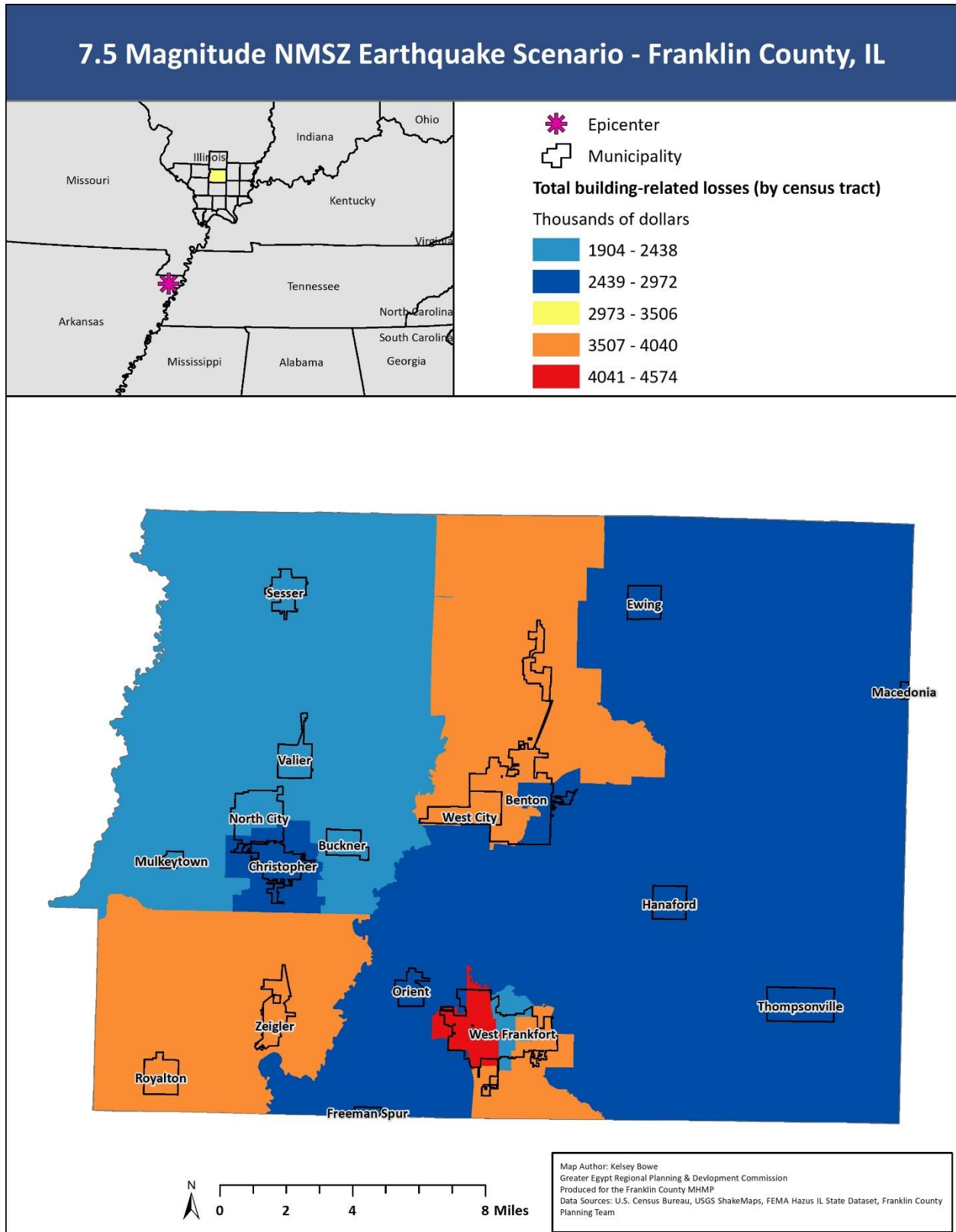
This scenario estimates 14,000 tons of debris will be generated, requiring 560 truckloads to remove. Thirteen households would be displaced as a result of the earthquake, and eight of the households would be in need of temporary public shelter. This model estimates between ten and 15 level 1 injuries, 1-2 level 2 injuries, and 0 severe injuries or deaths would occur from the earthquake, with the 2pm scenario having the highest estimates.

Table 4.18 and figure 4.10 show building-related economic loss estimates. In addition to the building related losses, there is an estimated \$450,000 in economic losses to the transportation sector and \$1.75 million in economic losses to utility systems. Total Economic losses are estimated to be \$38.9 million.

Table 4.21 – Building-related Economic Loss Estimates

Category	Single Family	Other Residential	Commercial	Industrial	Others	Total
<b>Income Losses</b>						
Wage	0	0.0733	1.5249	0.0989	0.1619	1.859
Capital-Related	0	0.0312	1.2179	0.0615	0.0419	1.3525
Rental	0.6299	0.2931	0.7129	0.0313	0.0712	1.7384
Relocation	2.2059	0.6849	1.1402	0.1383	0.6184	4.7877
<b>Subtotal</b>	<b>2.8358</b>	<b>1.0825</b>	<b>4.5959</b>	<b>0.33</b>	<b>0.8934</b>	<b>9.7376</b>
<b>Capital Stock Losses</b>						
Structural	3.5551	0.9882	1.4078	0.4734	0.7877	7.2122
Nonstructural	8.5693	2.2085	2.4258	0.7804	1.2886	15.2726
Content	1.9647	0.32	1.0557	0.4757	0.5208	4.3369
Inventory	0	0	0.0259	0.0976	0.0072	0.1307
<b>Subtotal</b>	<b>14.0891</b>	<b>3.5167</b>	<b>4.9152</b>	<b>1.8271</b>	<b>2.6043</b>	<b>26.9524</b>
<b>Total</b>	<b>16.92</b>	<b>4.6</b>	<b>9.51</b>	<b>2.16</b>	<b>3.5</b>	<b>36.69</b>

Figure 4.10





## 4.4. Disease Outbreaks, Epidemics, & Pandemics

### 4.4.1. Hazard Description

This hazard is the spread of various diseases or other health problems that increase at rapid rates. The term disease outbreak is typically used when disease spread is limited to small communities or regions, such as a school system, city, or county; Although it can also be used when referring to large scale disease spread. Epidemics are disease outbreaks that infect people throughout a nation or several nations. Pandemics are disease outbreak at a global scale. Pandemics are usually the result of highly-infectious, rapidly spreading diseases. Disease outbreaks may last days to years, and the effects on public health and the economy may be long lasting and severe.

While disease outbreaks are often the result of contagious (human to human spread) diseases, such as influenza or measles they can stem from other origins. Other sources of disease outbreak include foodborne pathogens (such as E. coli or salmonella), zoonotic disease spread (Animal to human spread, such as Lyme disease and west Nile virus), and public health trends (such as the rise in obesity rates). Some disease outbreaks also become endemic, in which a disease is consistently present but limited to certain regions; or seasonal outbreaks where the same disease will resurface at high rates during certain times of the year.

Examples of pandemics include Spanish Influenza, HIV/AIDs, and most recently, COVID-19. Detailed information regarding COVID-19 is widely available from the Center for Disease Control (CDC), Illinois Department of Public Health (IDPH), and County Health Departments. Disease Outbreaks are not considered a natural hazard by FEMA, and rarely qualify for FEMA emergency funding or grant programs. COVID-19 was declared a federal disaster in all 50 states and relief funding has been distributed through the Coronavirus Aid, Relief, and Economic Security (CARES) Act, 2020 [P.L. 116-136]; the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020, [P.L. 116-123], and the Families First Coronavirus Response Act, 2020 [P.L. 116-127].

#### 4.4.2. Geographical Location and Historical Occurrences

The Centers for Disease Control (CDC) maintains the National Outbreak Reporting System (NORS) for disease outbreaks in the U.S.

Table 4.22 Disease Outbreaks in Illinois from 2009-2018

Type of Outbreak	# Outbreaks	# Illnesses	# Hospitalizations	# Deaths
Person to person	1221	34456	876	24
Foodborne	603	19635	2958	74
Waterborne	33	1862	107	21
Animal Contact*	58	5065	998	9
Environmental	4	142	5	0
Indeterminate/unknown	23	516	23	1
Total	1942	61676	4967	129

Source: CDC NORS

\*The statistics for animal contact does not include diseases from invertebrate vectors such as mosquitos and ticks, nor does it contain diseases spread from animal bites; most cases are salmonella from touching reptiles and poultry.

Table 4.23 Covid-19 cases and deaths in Illinois as of 6/16/22

Covid cases	Confirmed deaths	Probable deaths
3,376,596	33,979	4,413

Source: Illinois Department of Public Health

As of Tuesday, May 17, 2022 Johns Hopkins University data estimates over one million people in the United States have died as a result of COVID-19.

#### 4.4.3. Risk

Since the nature of disease outbreaks vary depending on the type of illness, the risk varies as well. In general, the county has equal risk of an outbreak occurring although facilities such as schools or nursing homes have a higher risk due to the close density of people and vulnerability of children and elderly.

## 4.5. Hazardous Materials Release

### 4.5.1. Hazard Description

Hazardous materials release can take many forms, a general definition is the unintentional release of any material that may cause harm to human health or the environment or cause damage to critical facilities. Areas at highest risk of hazardous materials release are factories and warehouses where chemicals and other dangerous materials are produced or stored, major transportation routes including railways and interstate highways, and mines.

Depending on the type of incident and material released, the extent of such a hazard can range from mild chemical spills to dangerous explosions.

As per the Federal Emergency Planning and Community Right to Know Act (EPCRA) of 1986, IEMA implemented a statewide Hazardous Materials Emergency Planning Program in which any facility that uses or stores threshold amounts of federally mandated substances must report annually to state and local officials, and must immediately report any releases that occur.

#### 4.5.1.1. Train Derailments

Being in the central of the US, Illinois is a vital part of the transportation industry. The state has over 9,000 miles of railroads; with over 1,300 trains passing through Chicago every day<sup>29</sup>. Illinois leads the nation in number of carloads originating and terminating in the state each year, and has the second highest number of freight rail employees in the country. Additionally, millions of passengers use Amtrack services in the state each year.

Railway safety continues to improve in the United States. The Fixing America's Surface Transportation (FAST) Act of 2015 created new standards for tank cars that carry crude oil, ethanol, and other flammable liquids. These new tank cars, called DOT-117s and replace the older DOT-111 model. They are required to be built with thicker shells and shields, a ceramic thermal protection layer to prevent fire, and a fiberglass insulation layer to keep products at steady temperature and further reduce probability of tank punctures<sup>30</sup>. As of 2018, all DOT-111 crude oil tanks have been replaced. By 2023, all ethanol tanks will be phased out, and by 2025 all other tanks that carry flammable materials will be phased out of service<sup>31</sup>. Figure 4.11 shows number of train accidents that caused HazMat release in Illinois from 1975-2020.

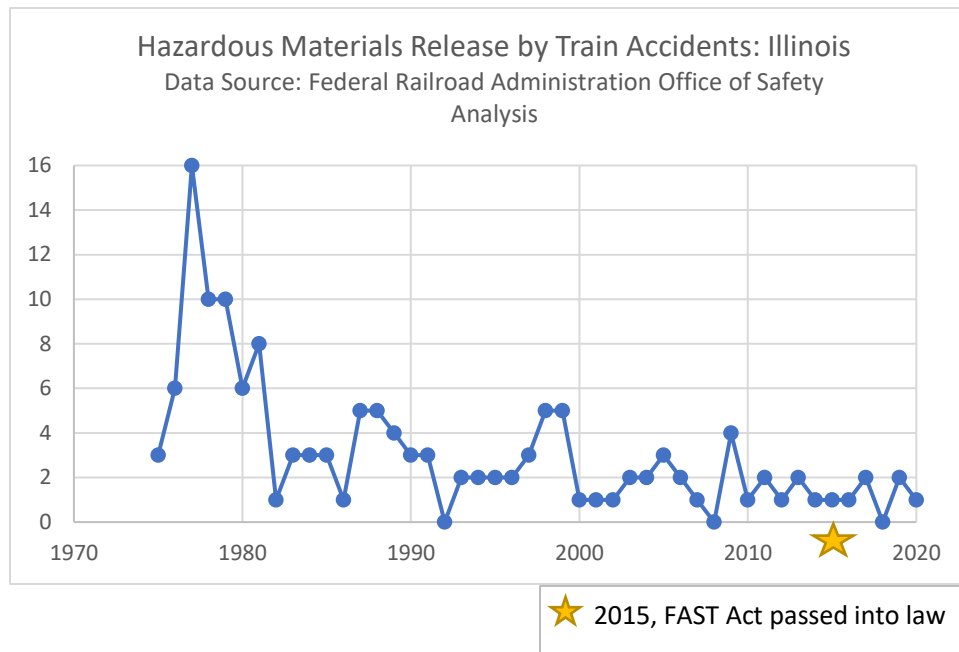
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<sup>29</sup> "Rail System" Illinois Department of Transportation

<sup>30</sup> Department of Transportation "'Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains" Final Rulemaking"

<sup>31</sup> Railway Supply Institute "HM-251/FAST Act Timeline"

Figure 4.11



#### 4.5.1.2. Acid Mine Drainage

Acid mine drainage is caused by surface mining, most often for coal. When coal deposits are 100ft or less below the ground, surface mining is the most cost-effective way to extract it. This process involves stripping the surface materials (overburden) away, removing the coal, and refilling the pit back with the overburden. Surface mining is incredibly disruptive to the environment, accelerating the chemical breakdown of minerals and chemicals in the soil. When iron sulfide is exposed to air and water, ferrous sulfate and sulfuric acid are produced and drained into water bodies. Acidic water often dissolves metals present in sediments, including aluminum, iron, manganese, arsenic, cadmium, mercury, and zinc<sup>32</sup>. Sulfate loadings (and secondarily, concentrations of dissolved metals) are directly related to the area of land mined in southern Illinois. It was estimated in 1982 that about 3,500 tons of sulfate per square mile of surface mined land enter streams annually in the Big Muddy and Saline watersheds<sup>11</sup>. Some surface mines in these areas have since closed down, so the numbers may be lower today.

Surface coal mines are found in Gallatin, Jackson, Jefferson, Johnson, Perry, Pope, Randolph, Saline, and Williamson counties (see section 4.7 for more details on coal mining)

<sup>32</sup> L.G. Toler "Some Chemical Characteristics of Mine Drainage in Illinois" GEOLOGICAL SURVEY WATER-SUPPLY PAPER 2078, US Department of the Interior, 1982.

#### 4.5.2. Geographic Location and Historical Occurrences

The most recent IEMA public report on hazardous materials spills includes incidents from 1987-2011. During these years there were 233 reported incidents for Franklin County, with the vast majority being spills of gasoline, diesel fuel, or crude oil<sup>33</sup>.

There have been six train derailments in Franklin County since 1972, only one of which involved hazardous materials. (Based on articles found in The Southern Illinoian archives) On August 12 1994, an Illinois Central Railroad train derailed. Ten of the 81 cars in the train left the tracks and one of the tank cars spilled 20,000 gallons of tetrachloroethylene. There were no injuries reported and no evacuations were necessary as the chemical does not produce toxic fumes. Tetrachloroethylene is an environmental hazard; EPA agents, firefighters, National Transportation Safety Board members, and representatives from the shipping companies were involved in the cleanup<sup>34</sup>.

Most recently, a fire at Sugar Camp mine near Benton IL in late August 2021 caused environmental problems. In order to extinguish the fire, the mining company pumped 46,000 gallons of foam containing perfluoroalkyl and polyfluoroalkyl substances (PFAS). These chemicals can be toxic when ingested, do not degrade in the environment, and are under the process of being restricted and phased out of use in many states. There is photo evidence of the foam spreading to above ground ditches and nearby farm fields. The IEPA tested water near the mines three weeks after workers had been evacuated and found PFAS levels up to 16 times higher than state health recommendations<sup>35</sup>.

#### 4.5.3. Risk

Transportation routes with the highest risk of hazardous materials release include Interstate 57 and all active railroads.

Other areas of high risk include factories and warehouses that use or store hazardous chemicals, hospitals, colleges, and universities that may store large amounts of cleaning supplies and other hazardous chemicals, and farms that store large amounts of fertilizer, herbicides, or pesticides.

Franklin County EMA maintains a list of Tier II Hazardous Materials stored within the county. It is updated regularly, for more information visit <https://franklincountyil.gov/fcema/>

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<sup>33</sup> Data.illinois.gov "IEMA Hazardous Materials Spills"

<sup>34</sup> Sickler, Linda "Chemical cleanup may take awhile" The Southern Illinoian, August 14, 1994.

<sup>35</sup> Hawthorne, Michael "Chemical nightmare" The Southern Illinoian. October 3, 2021.

## 4.6. Severe Winter Weather

### 4.6.1. Hazard Description

Severe winter weather is any cold weather event that poses risk to human life and property. Severe winter weather may also significantly disrupt transportation and economic sectors. Types of severe winter weather are heavy snowfall, extreme low temperatures, freezing rain, sleet, blizzards, ice storms, and strong winds. Freezing rain refers to precipitation falling as a liquid that enters sub-freezing air or cold surfaces, forming ice while sleet refers to precipitation that freezes while falling. The typical definition of severe winter storm for Illinois is an event that produces six inches of snow or more in 48 hours. Severity of winter weather can also be classified by wind speeds and ice.

News and weather outlets have been using the term “Polar Vortex” more commonly in recent years. While some outlets are using the term loosely, this report will refer to the NOAA definitions:

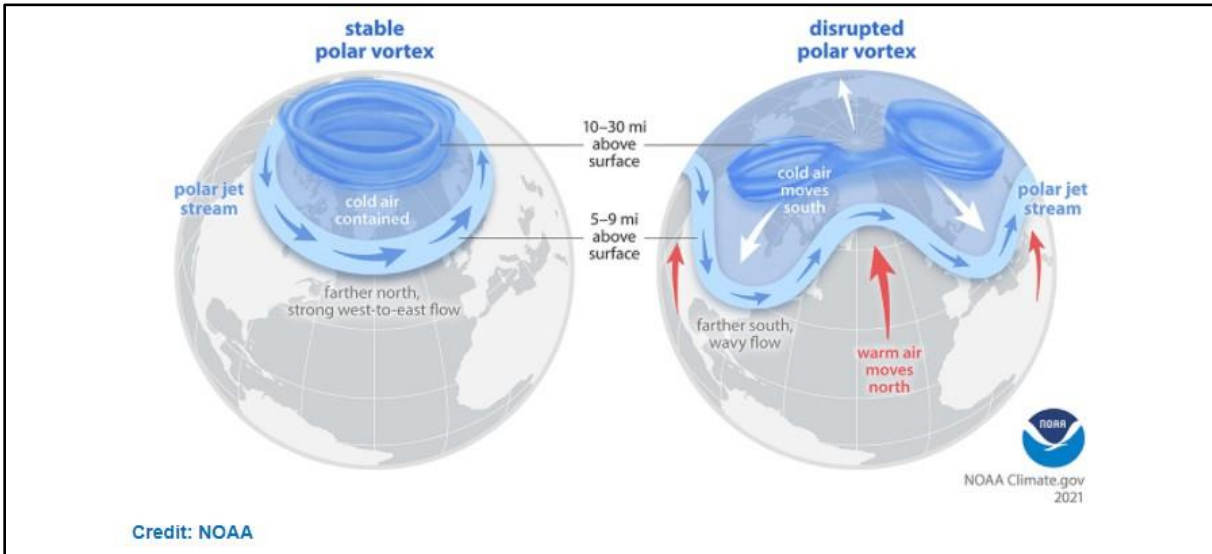
- Polar vortex: A band of strong westerly winds that rotate in the stratosphere, 10-30 miles above the surface of the earth, over the north pole. These winds enclose extremely cold air
- Polar Jet Stream: a band of winds in the troposphere, 5-9 miles above the earth’s surface, over the north pole

Winter weather in the mid to southern United States associated with the polar vortex occurs when it weakens and becomes disrupted or “wobbles”. This can in turn interact with the polar jet stream, causing it to move in more wavy forms than its traditional circulation around the north polar regions. These waves of polar jet stream air can dip down far into the U.S., causing severe cold outbreaks, along with ice and snow (figure 4.12)<sup>36</sup>. Some but not all winter storms in southern Illinois are associated with this natural phenomenon.

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<sup>36</sup> Lindsey, Rebecca, “Understanding the Arctic polar vortex” NOAA climate.gov, 2021.

Figure 4.12



#### 4.6.2. Specific Impacts

##### 4.6.2.3. Agriculture

Severe winter weather can inflict heavy tolls on the agriculture industry. Planting or harvesting can be delayed. Crops and livestock can die in extreme cases, especially in southern regions where many farmers do not have barns to house their animals in the event of a storm. Unsafe roads can disrupt transportation of harvest and other products on time, and icy conditions can delay barge shipments as well, which is relied on heavily along the Mississippi corridor.

##### 4.6.2.4. Urban

Snow, freezing rain, ice, and sleet can all cause dangerous road conditions, even in small amounts. Disruption of traffic and business closures due to winter weather can negatively impact local and broader economies. Transportation of goods and passengers can be delayed and schools may be shut down when roadways are covered in ice and snow. State, county, and local governments incur large costs for snow removal, salting the roads, and repairing roads that freeze and crack.

Freezing rain can cause immense property damage. When freezing rain comes into contact with surfaces, it forms an ice layer that can quickly become too heavy for power lines, trees, buildings, and roadways. Downed trees and power lines may disrupt power and communication for homes, business, and critical facilities without backup power options. Freezing temperatures can also cause pipes to freeze and burst, which can be very costly to repair.

#### 4.6.2.5. Human Health

Traffic accident frequency increases during winter weather. Negative impacts due to an accident can be exacerbated by delayed medical care - from unsafe roads to health facilities and first responders being stretched thin during winter storm events.

Extreme cold temperature events can lead to frostbite or hypothermia for residents. Windy conditions during a cold weather event lower the wind chill factor, further increasing risk to humans.

#### 4.6.2.6. Natural Landscapes

Effects of the hazard on natural areas are similar to the other sections. Freezing temperatures can cause frostbite and hypothermia in animals. Freezing over of waterbodies can kill some plants and animals. This most often occurs in areas of the south where less species are adapted to winter weather, or when a severe storm occurs later or earlier than normal in a season. Heavy snow and freezing rain can cause limbs to break or whole trees to fall, disrupting forest structure. Economic losses can stem from damaged park facilities, decreased tourism, delays in logging operations, and damaged timber stands.

### 4.6.3. Climate Change

As mentioned previously, a major effect of climate change in the Midwest is an increase in severe precipitation events, and an increase in heavy snowfalls has been an emerging pattern over the last decade for the eastern two-thirds of the continental US<sup>37</sup>.

While some evidence suggests climate change can be causing the polar vortex to wobble and lead to severe winter weather in more southern latitudes, the relationship is not fully understood. One possibility is that global surface temperature increase, especially over Arctic Sea ice, can cause enough changes in surface temperature and pressure to influence the polar vortex. It is also possible these recent winter weather events are just natural variations in the flows of the polar vortex and polar jet stream. There is limited historical data on patterns of the stratosphere, making it difficult to predict long-term trends for the future<sup>38</sup>.

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<sup>37</sup> "Climate Change and Extreme Snow in the U.S." NOAA National Centers for Environmental Information.

<sup>38</sup> Lindsey, Rebecca "Understanding the Arctic polar vortex", NOAA climate.gov, 2021.



#### 4.6.4. Geographic Location and Historical Occurrences

Severe winter storms hold the record in Illinois for most total damage produced by any short-term weather event.

Table 4.25 - Severe winter weather and number of records for Franklin County from 1996-2022.

Weather Type	Days
extreme cold	3
heavy snow	11
ice storm	4
winter storm	28

Source: NOAA Storm Events Database

Table 4.26 - Severe winter weather events that caused property damage in Franklin County

Date	Weather Event	Property Damage
1/1/1999	Ice Storm	50000
3/3/2008	Winter Storm	30000
1/26/2009	Winter Storm	250000
2/20/2015	Winter Storm	20000
2/23/2022	Winter Storm	5000

Source: NOAA Storm Events Database

#### 4.6.5. Risk

Although the risk for severe winter weather is lower in more southern counties, it does occur, and often causes severe damage to property and infrastructure. Severe winter weather can occur anywhere in Franklin County, the entire county has the same risk. Historical data is lacking for winter weather events in Franklin County; based on the data from 1996-2022 the County experiences an average of 1 winter storm each year.

## 4.7. Ground Failure

### 4.7.1. Hazard Description

Ground failure may refer to any consequence of shaking that affects the stability of the ground<sup>39</sup>. In southern Illinois this is usually caused by subsidence of the land due to sinkholes from karst features or underground mines.

#### 4.7.1.7. Karst

Karst is a type of topography where soluble bedrock (also called carbonate rock) exists. There are different types of soluble bedrock, the most common found in Illinois are limestone and dolomite. Sinkholes form when an area of karst does not have external surface drainage of stormwater. Instead of flowing into waterbodies, rain infiltrates deep into the soil and can dissolve the bedrock over a period of years to decades. As the rock dissolves and forms cracks, soil particles sink into the bedrock and can eventually form visible depressions in the ground. This formation acts as a funnel for stormwater, speeding up formation of the sinkhole. In some cases, the top soil layer will not sag, and instead form a bridge over the void, or shallow cave, that has been forming as the bedrock dissolves. These soil bridges can collapse suddenly and without warning, also leading to sinkholes. Sinkhole collapse usually occurs after intense storm events, but can also occur with severe drought or other causes of water table alteration<sup>40</sup>.

While karst sinkholes form naturally, they can be exacerbated by human influence on the landscape. Structures that alter natural drainage and increase stormwater runoff such as paved roads and parking lots, construction sites, and roof downspouts are all examples.

#### 4.7.1.8. Underground Mining

Mining has been a part of Illinois's economy since the state was settled. Mined resources include lead, zinc, fluorites, shale, clay, stone, limestone, dolomite, and coal. Commercial coal mining began around 1810, and since then over 7,400 coal mines have been operated in the state. Much of Illinois contains coal-bearing rock strata.

There are two main types of mine subsidence that may occur. Pit subsidence usually occurs over shallow mines (less than 100ft deep) where bedrock is thin (less than 50ft thick) or composed of weak minerals such as shale. Pits form when the roofs of these shallow mines cave in, and the ground materials above it collapse. This type of subsidence can occur rapidly, the resulting pits are usually 6-8ft deep and less than 16ft across<sup>41</sup>. Sag or trough subsidence occurs when pillars of mine shafts collapse, the size of the subsidence can vary widely depending on how many pillars fall. Sag subsidence may be hundreds of feet long and affect several acres of property. Instead of a single, deep pit forming; sag subsidence produces a low

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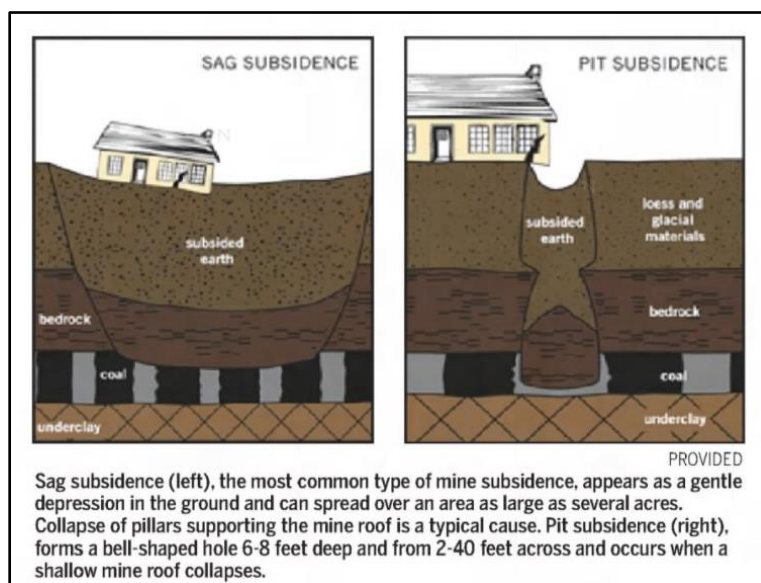
<sup>39</sup> "ground failure", Earthquake Glossary, USGS.

<sup>40</sup> White, W.B., "Geomorphology and Hydrology of Karst Terrains", Oxford University Press, New York, 1988.

<sup>41</sup> Bauer, R.A., "Mine Subsidence in Illinois: Facts for Homeowners" Illinois State Geological Survey, Prairie Research Institute, 2013.

depression in the ground over a large area. Both can cause significant building and property damage.

Figure 4.13 - Diagrams of mine subsidence



Source: Illinois Mine Subsidence Insurance Fund

#### 4.7.2. Geographic Location and Historical Occurrences

Many towns and residences are built on top of or adjacent to underground mines. Therefore, there is always a risk of land subsidence on such properties. Additionally, many abandoned mines do not have historical records or were never adequately mapped. The Illinois State Geological Survey (ISGS) provides a free interactive map online to search for underground mine locations throughout the state<sup>42</sup> (see figures 4.14 and 4.15). This mapping tool is up kept updated with mine records and areas of suspected abandoned mine sites. While a useful tool to search for mine sites in your area, the ISGS states there may be inaccuracies, and landowners concerned about subsidence on their property should contact their insurance company.

Franklin County rests over a geologic area with predominantly shale and coal bearing bedrock. While some areas of limestone exist, karst sinkholes are not a major concern. Figure 4.13 shows karst bedrock types and known sinkhole areas for southern Illinois. Many developed areas of the county sit directly over underground coal mines, figures 4.14 and 4.15 show known and suspected coal mines for southern Illinois and Franklin County.

There is no national or state database with records of ground failure events, however some records have been found from local news sources, these are displayed in table 4.27.

<sup>42</sup> "Illinois Coal Mines", Illinois State Geological Survey, Prairie Research Institute, <https://isgs.illinois.edu/illinois-coal-mines-ilmines>.

#### 4.7.3. Risk

Areas most at risk for ground failure are highly developed areas over abandoned mines or karst bedrock. The following essential facilities may be on top of underground coal mines, based on the ISGS mine dataset, but detailed assessments would need to be conducted to confirm the mine locations and assess risk of subsidence.

- Buckner Police Department
- Christopher Police Department
- Orient Police Department
- Royalton Police Department
- Valier Police Department
- Zeigler Police Department
- Buckner Volunteer Fire Department
- Christopher Fire Department
- Coello Volunteer Fire Department
- Ewing Northern Fire Protection Station 2
- Royalton Volunteer Fire Department
- Sesser Fire Protection District
- Valier Fire Department
- Zeigler Fire Department
- Denning Elementary School

Probability of ground failure is not possible to calculate at the county scale; boundaries and ages of abandoned coal mines are not known for all areas. Factors such as bedrock types, surface structures and construction activities, and water seepage may affect sinkhole formation and other types of ground failure.

Table 4.27 – Ground failure records from southern Illinois

County	Municipality	Year	# of subsidence events	Type	Diameter	Depth	Other notes	Date	Source
Perry	Du Quoin	1954	1	Mine	50ft		Occurred at 202N Line St, abandoned section of Jupiter Coal and Coke Co mine	December 1954	The Southern, Dec 15, 1954
Franklin	Zeigler	1970	1	Mine	no visible hole formed	NA	mine squeeze- ceiling of mine collapses and ground above shifts, Zeigler No 1 mine, closed in 1948, cracks and other damage to several buildings, street, and water mains	September 1970	The southern, Sept 25, 1970
Williamson	Energy	1979	2	Mine			NW part of village	1979	The Southern, Jun 22, 1981, 3
Williamson	Energy	1981	1	Mine	100ft		Sycamore road closed; water line snapped	March 1981	The Southern, March2, 1981 1
Williamson	Energy	1981	1	Mine	25ft	50ft	Energy village park, formed near playground, took several days to fill, Taylor No1 coal mine	June 1981	The Southern, Jun 22, 1981, 3
Williamson	Energy	1981	1	Mine	25ft	15ft	Energy village park, formed near playground, filled with dirt the day it was discovered, Taylor No 1 coal mine	May 1981	The Southern, Jun 22, 1981, 3
Franklin	Sesser	1986	1	Mine	5ft	27ft	suspected to be caused by subsidence of Old Ben 21 mine, blocked city's sewer system	February 1986	The Southern, Feb 07, 1986, E21
Jackson	Dowell	1986	1	Mine			entire block on NW part of village, multiple areas sinking, hole has been visible since 1971	Oct 1986	The Southern, Oct 10, 1986
Williamson	Energy	1992	1	Mine	20ft	12ft	Energy village park	January 1992	The southern, Jan 15, 1992 5W
Union	Dongola	1993	3	Karst	10ft,10ft,	6ft, 6ft, 50ft	Sinkholes were filled with water, holding the land up, construction of a new well drew down the water table, causing the surface to collapse into the holes	March-May 1993	The southern, June 14, 1993, 3A
Williamson	Cambria	1996	1	Mine	22 by 12 ft	81ft	Madison coal co No 12 mine shaft	April 1996	The Southern Apr 27, 1996 A3
Williamson	Johnston City	2007	1	Mine	NA	NA	active mine roof collapsed from moisture, no workers injured, Mach Mine	September 2007	The Southern, Sep 13, 2007
Jackson	Grand tower	2012	2	Levee pipes burst		deepest 19.5 ft		June 2012	the southern June 17, 2013,1
Jackson	Grand Tower	2020	1	Karst	30ft	5ft	sinkhole formation sped up by flooding on Mississippi, caused sewers to back up, road closures	June 2020	The Southern, June 11, 2020 A3
Perry	Du Quoin	2020	1	Mine	8ft	14ft	Smith Ave	February 2020	Benton News, Feb 29, 2020
Williamson	Carterville	2020	1	Mine	25ft	15ft		2020	Benton News, Feb 29, 2020
Franklin	Macedonia	2020	1	Mine	Planned longwall subsidence	NA	road closures on I-14	June 2020	The Southern, Jun 18,2020 A3

Figure 4.13

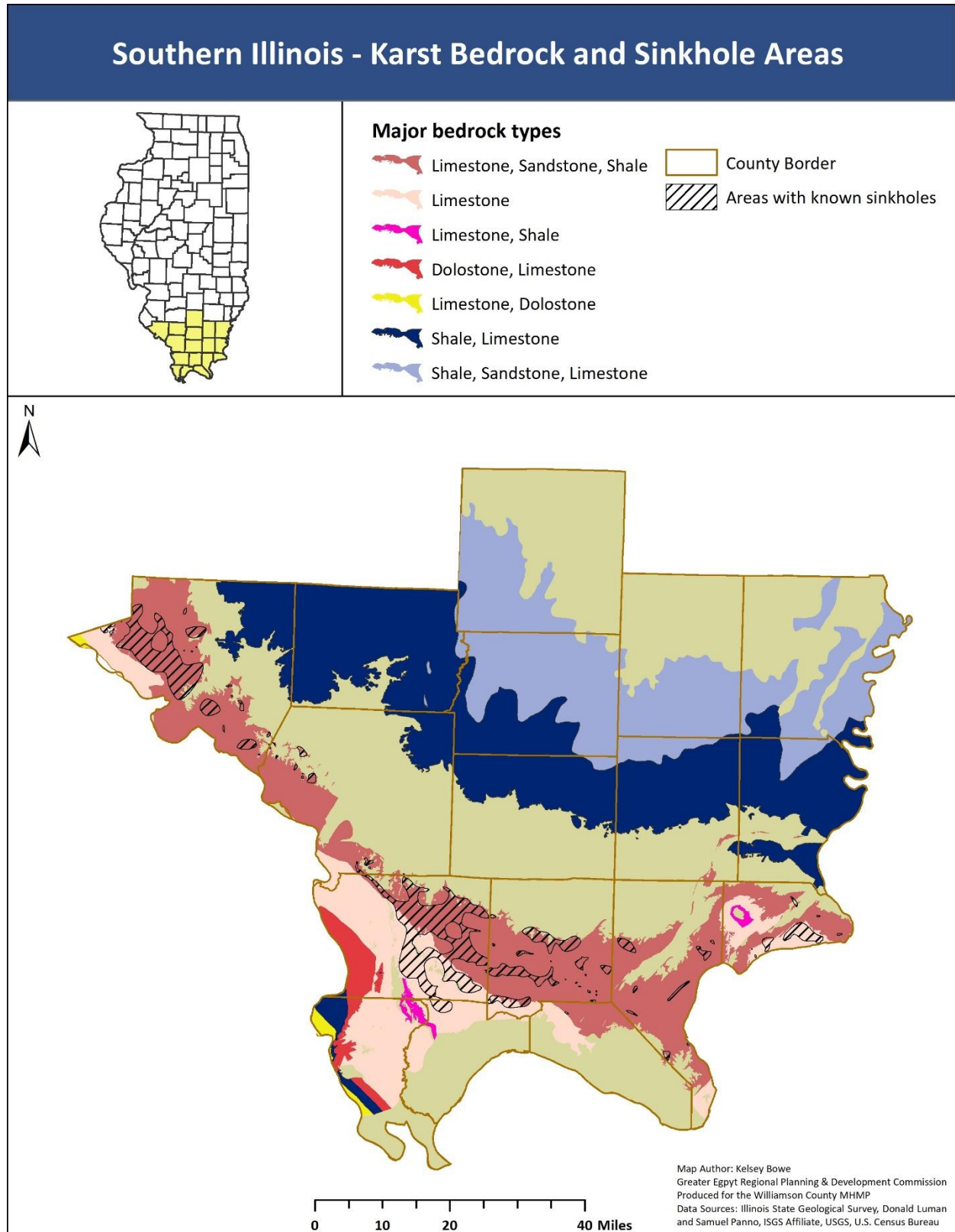




Figure 4.15

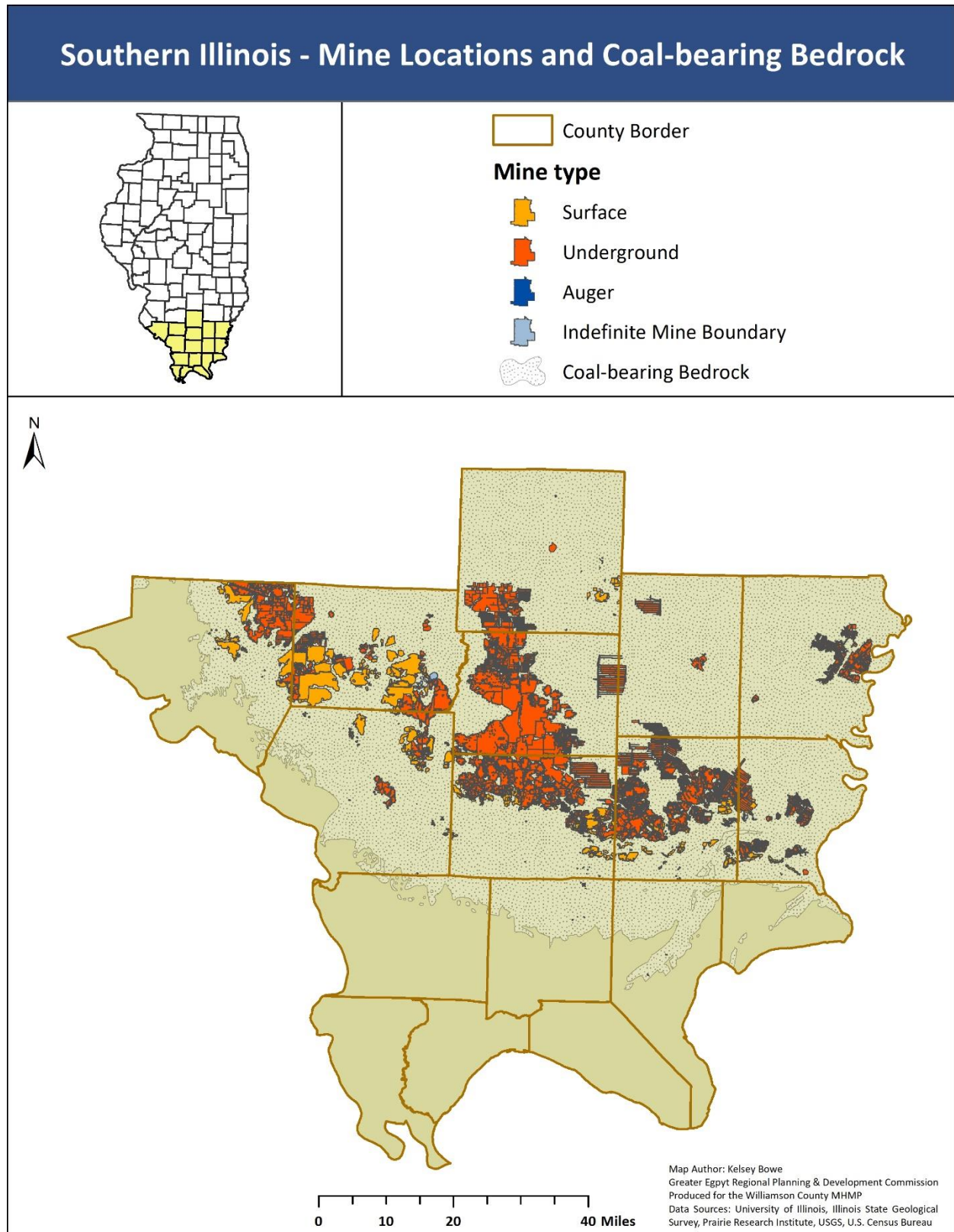
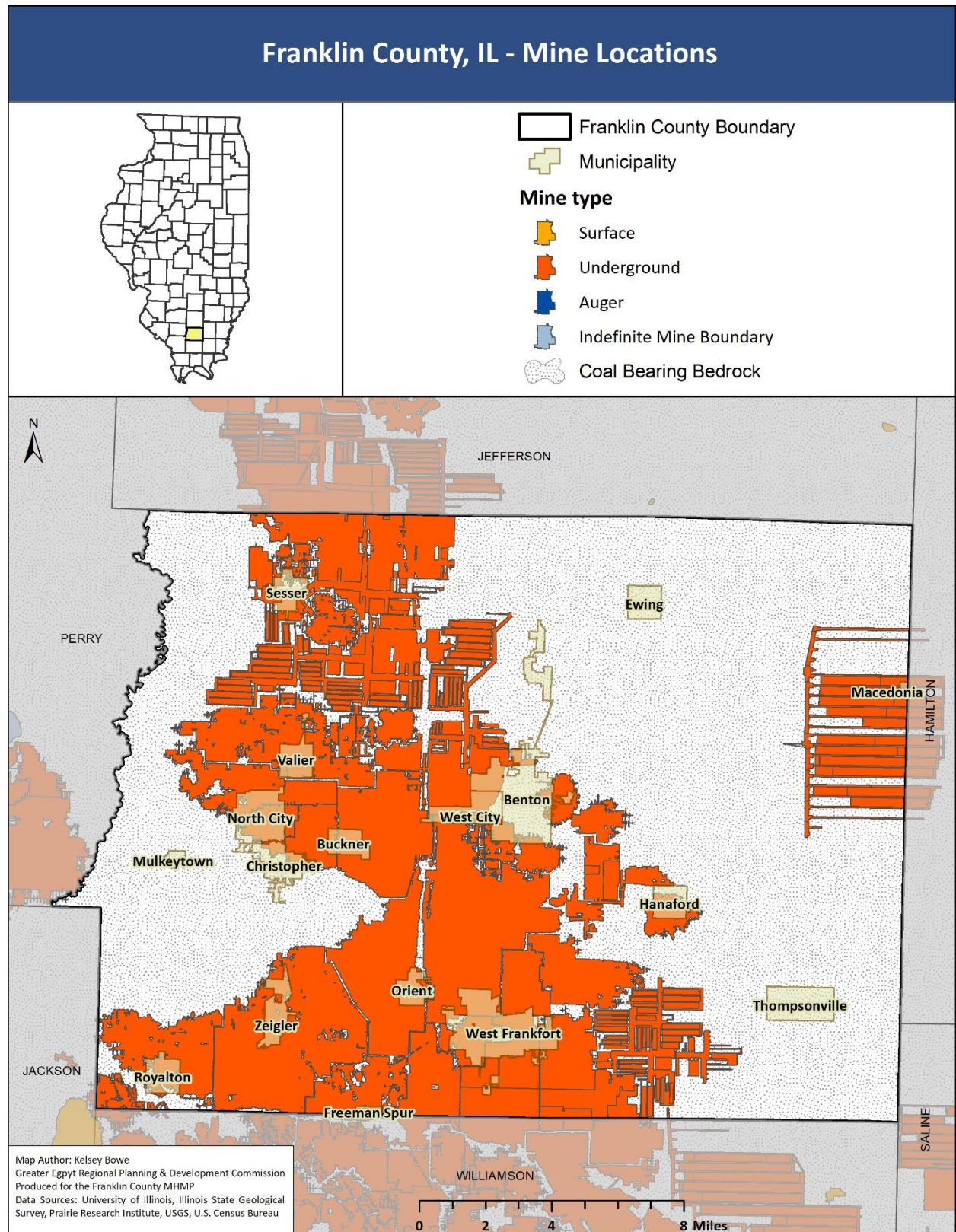


Figure 4.16





## 4.8. Severe Thunderstorms

### 4.8.1. Hazard Description

Thunderstorms are rain bearing clouds that produce lightning. The major thunderstorm categories are single cell, multi-cell, squall line, and supercells. Single-cell storms are short lived and can result in heavy rain and lightning. Multi-cell storms occur along a front and can cause hail, strong winds, tornados, and flooding. Squall storms are a composition of smaller cells that are oriented in a thin line. These systems can cause severe winds and heavy rain. A supercell is a highly energetic storm characterized by a strong rotating updraft. Supercells can cause rain, hail, lightning, high winds, and strong tornados. Thunderstorms can also move together as a system. These are known as Mesoscale Convective Systems (MCS) and may last over 12 hours and cover areas as large as a state<sup>43</sup>.

Thunderstorm related hazards can be serious. Lightning can cause injury or death to humans, damage to structures, and start fires. The National Weather Service reports that lightning injures roughly 300 people per year and kills 80 people per year in the United States. High wind speeds caused by thunderstorms can result in damage to homes, buildings, trees, and infrastructure. Hail produced by thunderstorms can cause injury to people and damage to automobiles and infrastructure. According to the National Weather Service, for a thunderstorm to be severe it must either produce hail of at least one inch in diameter, winds of at least 58 mph, or produce a tornado. A combination of 40mph winds and 0.5" hail also qualifies as severe.

### 4.8.2. Climate Change

The largest impacts the Midwest is experiencing from climate change are an increase in spring and summer precipitation and increased flooding. From 2010-2014, the state of Illinois experienced a record number of extreme precipitation events. There are predicted increases in temperature, precipitation, and evaporation in Illinois, leading to frequent and more intense floods and droughts<sup>44</sup>. The Eastern U.S. is also expected to see an increase in days with favorable conditions for severe thunderstorms with the changing climate<sup>45</sup>.

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<sup>43</sup> "Severe Weather 101", NOAA National Severe Storms Laboratory.

<sup>44</sup> "Climate Change in Illinois" Illinois State Water Survey/Prairie Research Institute

<sup>45</sup> NASA - Global Climate Change, "Severe thunderstorms and climate change", April 7, 2013.

#### 4.8.3. Geographic Location and Historical Occurrences

There are 149 total records of thunderstorm winds in Franklin County from 1962 to 2022, with 97 of the records causing property damage and/or injuries. See Table 4.28 for a list of damaging wind records from the last decade.

There are 101 total records of hail in Franklin County from 1/1/1950 to 1/31/2021, with four reports of property damage and no records of death or injury (table 4.29).

There are three total records of lightning in Franklin County from 1/1/1950 to 1/31/2021, all of which caused property damage (table 4.30). No injuries or deaths from lightning have been recorded for Franklin County.

#### 4.8.4. Risk

The county has equal risk of severe thunderstorms occurring, on average Franklin County experience 2.5 severe thunderstorms per year based on available NOAA data.

Table 4.28 - Recorded thunderstorm winds that caused property damage and/or injury in Franklin County 2010-2020.

Location	Date	Wind Speed (knots)	Injuries	Property Damage	Indirect Injuries
EWING	5/24/2010	52	0	30000	0
SESSER	6/14/2010	52	0	10000	0
SESSER	8/12/2010	52	0	50000	0
MULKEYTOWN	8/12/2010	61	0	40000	0
CHRISTOPHER	8/15/2010	52	0	25000	0
ROYALTON	10/26/2010	61	0	25000	0
WEST FRANKFORT	4/15/2011	52	0	6000	0
SESSER	4/19/2011	65	0	100000	0
BENTON	4/19/2011	65	0	100000	0
MULKEYTOWN	4/19/2011	78	0	70000	0
ZEIGLER	4/19/2011	56	0	10000	0
BENTON	5/25/2011	52	0	9000	0
WEST FRANKFORT	6/19/2011	70	0	200000	0
BENTON	6/19/2011	83	0	180000	0
ROYALTON	6/19/2011	61	0	75000	0
SESSER	6/21/2011	78	1	250000	1
CHRISTOPHER	7/1/2012	65	0	200000	0
VALIER	7/1/2012	61	0	20000	0
WEST FRANKFORT	7/1/2012	56	0	10000	0
CHRISTOPHER	1/29/2013	74	0	50000	0
REND CITY	1/29/2013	65	0	40000	0
PLUMFIELD	6/17/2013	52	0	20000	0
WEST FRANKFORT	6/23/2013	52	0	16000	0
CHRISTOPHER	6/29/2013	52	0	15000	0
VALIER	6/20/2014	61	0	10000	0
BENTON	4/25/2015	56	0	5000	0
THOMPSONVILLE	4/25/2015	52	0	4000	0
BENTON	6/21/2015	52	0	2000	0
SESSER	12/23/2015	61	0	30000	0
SESSER	7/13/2016	74	0	60000	0
BENTON	7/13/2016	65	0	10000	0
SESSER	4/26/2017	56	0	10000	0
SESSER	5/31/2018	56	0	8000	0
WEST CITY	6/26/2018	56	0	5000	0
SESSER	6/28/2018	65	0	70000	0
ZEIGLER	2/7/2019	65	0	20000	0
CHRISTOPHER	3/24/2019	61	0	25000	0

Source: NOAA Storm Events Database

Table 4.28 Continued

Location	Date	Wind Speed (knots)	Injuries	Property Damage	Indirect Injuries
WEST FRANKFORT	5/21/2019	56	0	5000	0
BENTON	3/12/2020	65	0	15000	0
NORTH CITY	5/24/2020	50	0	1000	0
SESSER	5/25/2020	61	0	3000	0
WEST FRANKFORT	5/25/2020	52	0	2000	0
CHRISTOPHER	8/10/2020	61	0	60000	0
SESSER	8/10/2020	56	0	15000	0

Source: NOAA Storm Events Database

Table 4.29 – Hail records that have caused property damage, Franklin County, IL.

Location	Date	Hail Size (in)	Property Damage	Event Narrative
ZEIGLER	5/31/1998	1.75	25000	Golf ball size hail in the Royalton and Zeigler areas dented vehicles.
REND LAKE SOUTH	4/21/2002	1.75	100000	Golf ball size hail occurred at the Sesser exit of Interstate 57, and half-dollar size hail occurred at Rend Lake. At least a couple dozen vehicles and 50 homes were damaged to some degree.
WHITTINGTON	6/27/2002	0.88	2000	Hail damaged at least one vehicle on Interstate 57 near the Sesser exit.
CHRISTOPHER	5/11/2016	1.5	40000	These ping-pong ball size hailstones were photographed.

Source: NOAA Storm Events Database

Table 4.30 – Lightning records that have caused property damage, Franklin County, IL.

Location	Date	Property Damage	Event Narrative
CHRISTOPHER	10/26/2010	10000	A house was struck by lightning.
WEST FRANKFORT	7/3/2012	9000	Lightning struck a tree and a house. The house caught fire, resulting in damage to the roof.
BENTON	8/4/2015	10000	There were several reports of power outages caused by lightning.

Source: NOAA Storm Events Database

## 4.9. Flooding

### 4.9.1. Hazard Description

Flooding in southern Illinois is a significant and recurring hazard. This is a result of lying between the two largest rivers in the U.S. (when ranked by discharge), the Mississippi and Ohio; as well as climactic and seasonal factors. Characteristics of floods are uniquely influenced by precipitation intensity, infiltration rates, hydrogeologic features of a watershed, and interactions with the built environment.

There are 2 different types of floods that may occur in southern Illinois:

### 4.9.2. Flash/Upstream Floods

Flash flooding occurs when heavy rainfall leads to rapid flooding in upstream catchments and smaller tributaries. Urban flooding, when water overwhelms an area's drainage capacity is also a type of flash flood. Due to the fast-moving water inherent with flash floods, there can be significant hazards to people and the built environment. These can include loss of human life, destroyed buildings, downed trees, submerged vehicles, downed utilities, and more. Flash floods most often occur in the spring and early summer.

Flash flooding from extreme precipitation (defined as a weather event with more than two inches of precipitation) can have many widespread negative effects. Increased stormwater flow can lead to more pollutants in water bodies including excess nutrients from agriculture and urban fertilizers, pesticides and herbicides, sediments, motor oil and other vehicle pollution, and microbial pathogens.

Urban flooding is defined by the State of Illinois as "The inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers. 'Urban flooding' does not include flooding in undeveloped or agricultural areas."<sup>46</sup> A major concern with urban flooding is that it can be difficult to predict which areas have the highest risk, according to the summary report of the Urban Flooding Awareness Act, 90 percent of insurance payouts for urban flooding in Illinois occurred outside of FEMA's mapped 100-year floodplain. The report also states that mapping areas of urban flooding is not feasible on a statewide level and should be addressed by communities. Increased precipitation and urban flooding will also increase stormwater pollution. There are currently no counties in southern Illinois that have stormwater ordinances.

### 4.9.3. Riverine/Downstream Floods

Riverine floods occur along major rivers and develop more slowly. These floods typically form as a result of widespread, long-lasting rainfalls. Riverine floods in smaller tributaries can occur, but they often runoff and lead to larger downstream flooding. The lag between rainfall and

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<sup>46</sup> IL General Assembly Public Act 098-0858 "Urban Flooding Awareness Act"

elevated river levels provides more warning of an impending flood event, generally allowing for evacuation, some property protection, and other emergency measures to be made. Riverine floods can have a wide variety of side effects, from immediate damage due to the force of water and debris moving to secondary and tertiary effects such as disruption of power and services, disease spread, change in hydrology of river channels, and many others<sup>47</sup>. The total damages to human health, property, the economy, and the environment depend on the height, duration, and distribution of flood waters.

#### 4.9.3.9. Flooding and Agriculture

Agriculture is a large component of southern Illinois's economy, especially along the Mississippi, Big Muddy, and Ohio rivers. Both flash and riverine floods can have major impacts on farming and ranching. More intense and frequent spring rains can delay planting, overly saturated soil can harbor harmful fungi and other microbes, and stormwater flow can erode necessary top soils. Long-term riverine floods can destroy a harvest completely, damage buildings and equipment, flood out pasture fields, and drown livestock.

#### 4.9.4. Climate Change

Extreme precipitation is expected to increase with the warming climate, which in turn increases the frequency and intensity of floods. Springtime precipitation is expected to increase in southern Illinois by 10-15% by 2050, with Illinois already experiencing dramatic increases in extreme precipitation events over the past two decades<sup>48</sup>. 2019 was the second wettest year ever documented in the U.S., with extreme flooding events occurring along the Arkansas, Missouri, and Mississippi river basins. These floods affected 15 states, and had an estimated combined cost of \$20 billion<sup>49</sup>. The Mississippi River experienced its longest lasting flood in 2019, with river gauges at or above flood stage for record breaking periods in Iowa, Illinois, Mississippi, and Louisiana<sup>50</sup>. Similarly, the Big Muddy River at Murphysboro (USGS Stream Gauge 05599490) was at or above flood stage (22ft) for a total of 143 days during 2019. Peak water height was recorded at 31ft on June 11, 2019<sup>51</sup>.

#### 4.9.5. Geographic Location and Historical Occurrences

There have been 75 recorded floods and 31 flash floods in Franklin County in the NOAA Storm events database, records only appeared for years 1996-2021. The tables below show recorded flooding events that caused injury, property damage, and crop damage. Based on the last 25 years, Franklin County experiences on average three floods a year and at least one flash flood per year.

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<sup>47</sup> Nelson, S.A., "Flooding Hazards, Prediction, & Human Intervention", Tulane University, 2015.

<sup>48</sup> Frankson, R.K. et al., Illinois State Climate Summary, NOAA Technical Report, 2017.

<sup>49</sup> National Oceanic and Atmospheric Administration, "2019 was the 2nd wettest year on record for the U.S." January 8, 2020.

<sup>50</sup> Donegan, Brian, The Weather Channel, "2019 Mississippi River Flood the Longest-Lasting Since the Great Flood of 1927 in Multiple Locations" May, 22, 2019.

<sup>51</sup> USGS National Water Information System: Web Interface, USGS 05599490 Big Muddy River at RTE 127 at Murphysboro, IL

Table 4.31 - Flood Events in Franklin County that caused injury, property damage, or crop damage

Location	Date	Injuries	Property Damage	Crop Damage
	4/22/1996	0	5000	0
	2/1/1999	0	3000	0
	5/1/2002	0	3000	0
THOMPSONVILLE	3/18/2008	0	1500000	0
THOMPSONVILLE	5/1/2011	0	30000	0
PLUMFIELD	5/1/2011	1	500000	0
PLUMFIELD	12/1/2011	0	1000	0
ZEIGLER	6/3/2013	0	0	10000
BENTON	4/29/2017	0	40000	0
ZEIGLER	5/1/2017	0	70000	0
NORTH CITY	6/23/2017	0	40000	0

Source: NOAA Storm Events Database

Table 4.32 - Flash flood events in Franklin County that caused property or crop damage

Location	Date	Property Damage	Crop Damage
WEST FRANKFORT	4/28/1996	3000000	50000
WEST FRANKFORT	5/10/1996	8000000	0
COUNTYWIDE	4/15/1998	10000	0
WEST FRANKFORT	6/29/1998	100000	0
COUNTYWIDE	1/21/1999	100000	0
COUNTYWIDE	6/27/2002	75000	0
BENTON	10/18/2004	0	10000
SESSER	5/8/2009	10000	0
WEST FRANKFORT	8/14/2016	5000	0
BENTON	11/2/2017	5000	0

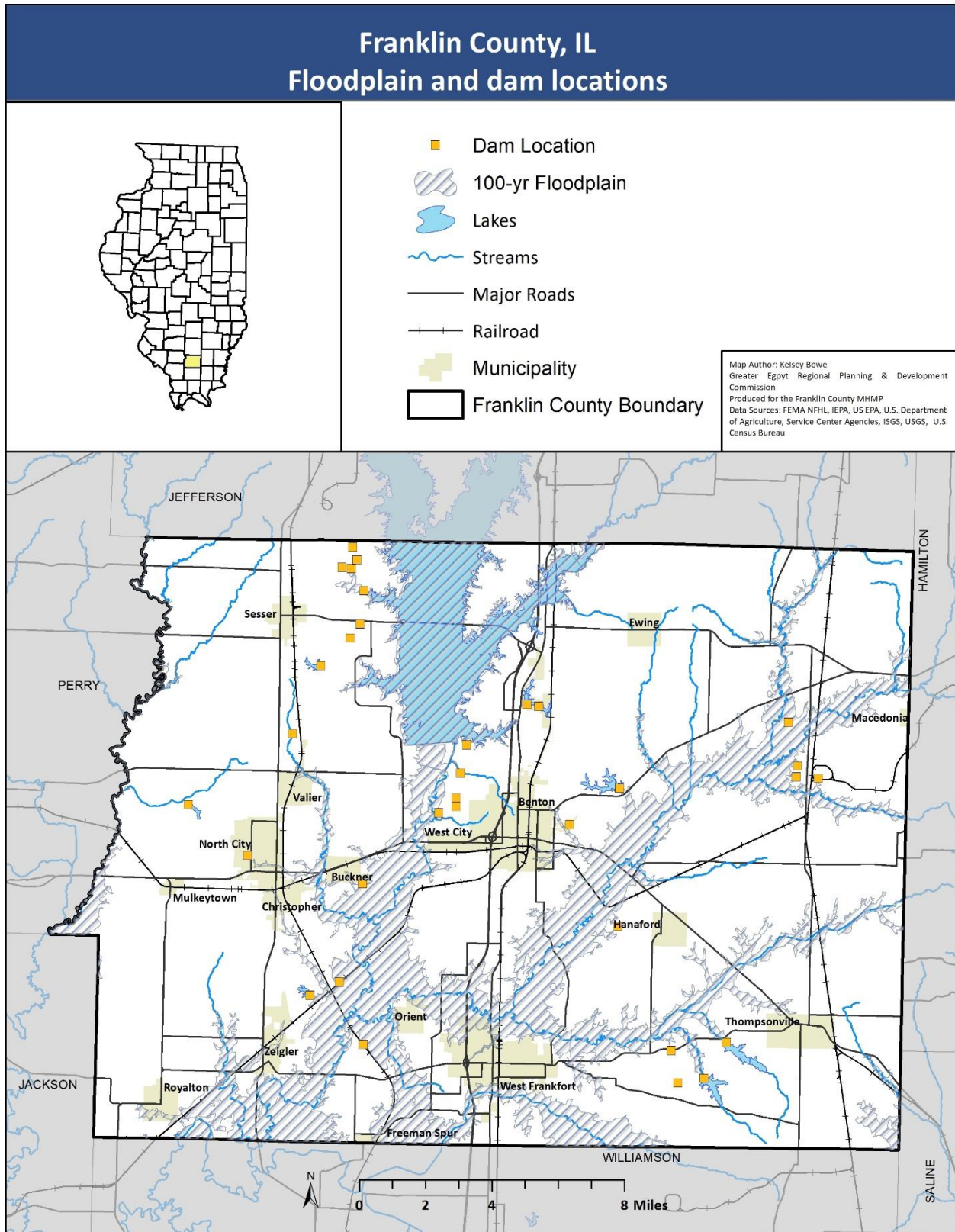
Source: NOAA Storm Events Database

#### 4.9.6. Risk

Flash floods may occur anywhere during heavy rainfall. Impacts are generally more severe in urban areas where there are impervious surfaces, and along low-lying roadways. Riverine flood risk is highest in the FEMA designated floodplain, especially near the Big Muddy River and its larger tributaries. Figure 4.16 shows the 100-year floodplain, major water bodies, and dam locations for Franklin County. There are no essential facilities within the 100-year floodplain in Franklin County.



Figure 4.17



## 4.10. Dam and Levee Failure

### 4.10.1. Hazard Description

Dams and levees are both river engineering structures used to control the path and movement of water. Reservoirs created from damming waterways are used for flood control, recreation, storing municipal water supply, and various other purposes. Dam failure can be a significant hazard to surrounding communities depending on the size of the reservoir, age, and structural integrity of the dam in question.

Most dam failures are caused by overtopping (floods that exceed the capability of the dam), internal erosion, and mechanical failure. Because there is so much variation and uncertainty, it is difficult to predict if or when a dam will fail. Detailed risk assessments are not available for all dams in the United States, although the average rate of large dam (greater than 40ft in height) failure in the US is 0.0001 dams/year<sup>52</sup> This rate does not take into account any factors other than dam height and age and should not be used as a replacement for detailed risk assessments performed on individual dams.

The risk of an incident or failure depends of many factors including height of the dam, size of reservoir, age of dam, and frequency of floods and seismic events that can weaken the structural integrity of dams. The amount of damage also depends on the amount or type of infrastructure and number of people living in the potential hazard zone.

Levees are used to contain a river or waterbody to a certain area, protecting the area behind from flooding events. Most large river levees in the U.S. were built by the United States Army Corps of Engineers (USACE) and are maintained by local levee commissions. 97% of levees are earthen embankments, the remaining 3% are concrete and rock levees as well as floodwalls<sup>53</sup>.

Issues that can lead to levee breaches include, seepage, undersizing from floods, erosion, damage from tree roots and burrowing animals, and development projects near the levee. In cases of severe floods, levees can also be overtopped. Levee systems also pose a unique issue to riverine flooding. While they are designed to protect communities and property from flood events, the structures themselves can also exacerbate flood events downstream. Levee systems make river channels narrower, when heavy precipitation occurs the water flows faster and higher than it would without the structures in place.

There are many outdated and deteriorating infrastructures in the U.S. including dams and levees. The average age of all dams in Illinois is 53 years. The American Society of Civil Engineers (ASCE) gives the total of Illinois's infrastructure a grade of C-, with dams receiving a

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<sup>52</sup> Ferrante et al. "Uncertainty Analysis for Large Dam Failure Frequencies Based on Historic Data" nrc.gov

<sup>53</sup> "Overview of Levees" 2021 Report Card for America's Infrastructure

C.<sup>54</sup> This grade is mostly due to aging systems, increased usage, and inadequate funding to inspect, maintain, and repair infrastructures.

The extent of dam failure can be defined in terms of percentage of the structure that fails, the area of land that was flooded, or the monetary value that was damaged as a result of the event.

#### 4.10.2. Climate Change

As of the most recent National Climate Assessment, there are no comprehensive climate change related risk assessments for water infrastructure of the U.S.<sup>55</sup>, but refer to the flooding and thunderstorm sections for specific information regarding climate change and these hazards, where increases in both can lead to weakening of dams and levees.

#### 4.10.3. Geographic Location and Historical Occurrences

There are no levees listed for Franklin County in the USACE National Levees Database, however there are levee systems along the Mississippi River in neighboring counties of southern Illinois. A failure of these may impact emergency services, traffic, and the economy within Franklin County.

The USACE National Dams inventory lists 33 dams for Franklin County (table 4.34), six of which have a high hazard potential. They have an average age of 61 years. None of the dams in Franklin County are used for hydropower. All of the Dams are regulated and inspected by IDNR or USACE.

Dam hazard potential is not the probability of failure, rather it is an estimation of the types and cost of damages that would occur in the event of failure. High hazard potential dams would likely cause loss of human life; in addition, large economic loss, environment and utility damages are also expected. Significant hazard potential would lead to heavy economic loss, environmental damage, or disruption of lifeline facilities but no deaths. Low hazard potential dams would have very small economic damage, typically limited to the owner's property<sup>56</sup>.

Many dams have an Emergency Action Plan (EAP) although it is not currently required by USACE or any Illinois regulatory agency. EAPs list potential emergency situations and have detailed instructions to be followed to minimize loss of life and damage to facilities and surrounding properties in the event of a dam failure or other emergency<sup>57</sup>.

The Association of Dam Safety Officials (ASDSO) and the National Performance of Dams Program (NPDP) both maintain databases that hold records of dam incidents and failures. There are currently no recorded incidents for any dams in Franklin County.

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<sup>54</sup> Illinois Section of the American Society of Civil Engineers "Report Card for Illinois Infrastructures", 2018.

<sup>55</sup> Lall, U.T. et. Al. 2018: Water. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II U.S. Global Change Research Program, Washington, DC, USA, pp. 145–173.

<sup>56</sup> FEMA, "Federal Guidelines for Dam Safety", April 2004.

<sup>57</sup> Illinois Dam Safety Report 2018

A recent example of a dam failure in the Midwest occurred in May 2020 in Midland County, Michigan. Edenville dam, owned by Boyce Hydro Power company, failed after heavy rains produced a 500-year flood event. The earthen dam was originally constructed in 1925. Old age, the need for a series of repairs, and pressure from the rising reservoir caused the sand embankment to liquefy<sup>58</sup>, leading to the failure. 10,000 people had to be evacuated, 2,000 homes, multiple businesses, and several roads and bridges were damaged. The Federal Energy Regulatory Commission (FERC) had issued the owner multiple violations from 2005-2015; and in 2018 revoked their hydroelectric license entirely for lack of compliance with repair requests and failure to meet safety standards. 2019-2020 consisted of a series of permitting arguments and lawsuits between Boyce Hydro and the State, but repairs were never completed<sup>59</sup>.

The reservoir size in Midland was 66,200 acre-feet. For comparison, Rend Lake is 607,910 acre-feet. Rend Lake Dam is relatively young compared to the average for the U.S., it is owned by the USACE and inspected on a 5-year schedule. The USACE and Rend Lake Conservancy District participated in planning activities for this MHMP.

#### 4.10.4. Risk

Risk area for dam failure depends on the size of the reservoir. The area that could be flooded is known as the dam breach inundation area. Risk area for levee failure includes the floodplain that is protected by the levee system. Probability of dam or levee failure varies considerably. Factors including age of the structure, repair history, and weather must be taken into account. Detailed probabilities do not exist for the dams in Franklin County.

In a scenario of a maximum high pool dam breach at Rend Lake, an estimated 1,603 (daytime) to 2,982 (nighttime) people would be at risk, 1,119 buildings are at risk, and total damages could exceed \$97 million<sup>60</sup>.

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<sup>58</sup> House, K, "Report: Shoddy construction, ignored threats led to Edenville Dam collapse", Bridge Michigan, September 2021.

<sup>59</sup> Roth, C, "Timeline: The Edenville Dam saga, before, during and after the break" MLive.com, September 2020.

<sup>60</sup> "Risk Characteristics," Rend Dam, National Inventory of Dams

Table 4.34 - List of dams for Franklin County, IL

Dam Name	Stream/River	Date completed	Hazard Potential	EAP
West Frankfort New City Lake	Stevens creek, Trib Ewing creek	1945	high	yes
Sugar Camp/Mine 1/North Refuse Disposal	Sugarcamp creek	NA	high	yes
Sugar Camp/Mine 1/Coal refuse disposal 1	Trib Middle Fork, Big Muddy river	NA	high	yes
Valier Lake	Andy Creek	1905	high	no
SI Energy/Mine 25/Slurry Cell 2	Trib Tilley creek	1987	high	yes
Rend Lake	Big Muddy River	1971	high	yes
Lake Moses	Trib Drummond Branch	1918	significant	no
Lake Benton	Marcum Branch	1939	significant	no
Lake Hamilton	Marcum Branch	1912	significant	no
Liberty Land/Mine 26/Slurry Cell 3	Sandusky Creek	1987	significant	yes
West Frankfort Old City Lake	Tilley Creek	1945	significant	yes
Ill Coal Recovery/Mine 21	Jackie Branch	1960	significant	no
Christopher Old Reservoir	Trib Andy Creek	1900	significant	no
Cambon Lake	Trib Big Muddy River	1931	significant	no
Zeigler City	Trib Big Muddy River	1948	significant	no
Ill Coal Recovery/Slurry Cell 6	Trib Jackie Branch	NA	low	no
Christopher New Reservoir	Trib Andy Creek	NA	low	no
Sugar Camp/Mine 1/Freshwater Pond	Trib Middle Fork, Big Muddy river	NA	low	no
Sugar Camp/Mine 1/Freshwater Lake	Trib Akin Creek	NA	low	no
Mirror Lake	Trib Middle Fork, Big Muddy river	2001	low	no
Ill Coal Recovery/Slurry Cell 3	Trib Jackie Branch	1984	low	no
Ill Coal Recover/Slurry Cell 2	Trib Jackie Branch	1984	low	no
Ill Coal Recovery/Slurry Cell 4	Trib Jackie Branch	1986	low	no
Liberty Land/Mine 24/Freshwater Lake	Trib Big Muddy River	1996	low	yes
Liberty Land/John Ross Plant/ Sediment Pond	Trib Tilley Creek	1988	low	yes
Freeman United	Trib Middle Fork, Big Muddy river	1960	low	no
Beaver Lake	Trib Big Muddy River	8/12/2014	low	no
Liberty Land/Mine26/Slurry Cell 4	Sandusky Creek	5/9/2014	low	yes
Liberty Land/Mine 24/Slurry Cell 2	Trib Big Muddy River	5/9/2014	low	yes
Liberty Land/Mine 24/North Pond	Trib Sugar Creek	11/11/2013	low	yes
Buckner Reservoir	Off Stream	8/15/2011	low	no
Sesser Reservoir	Trib Sandusky Creek	7/13/2011	low	no
Old Ben/Mine 24/Sediment and Slurry Dam	Trib Big Muddy river	5/23/1995	low	no

Source: USACE National Inventory of Dams

## 4.11. Drought and Excessive Heat

### 4.11.1. Hazard Description

There are many different definitions of drought, but in general the term refers to conditions in which below average rainfall occurs and leads to water shortage problems in a given area. There is no official length of time for the conditions listed to be considered a drought, but they are generally measured in terms of weeks or growing seasons and may last over the span of several years<sup>61</sup>.

Drought conditions are often accompanied and exacerbated by extreme heat events. Elevated temperatures result in faster rates of evaporation. This results in worsening of drought conditions and decreased soil moisture content. Drought and extreme heat conditions can negatively impact agricultural productivity, urban and natural landscapes, and human health. Severity of drought events depends on duration and geographical extent of the conditions and can also be affected by land use demands, landcover, and water supply.

### 4.11.2. Specific Impacts

#### 4.11.2.10. Human Health:

Heat Cramps- Muscular pains and spasms due to heavy exertion, is usually the first sign a person is experiencing heat-related illness.

Heat Exhaustion- Typically occurs when people have been exercising or working strenuously in hot, humid environments. Heavy sweating leads to rapid loss of body fluids, blood flow to the skin increases while blood flow to vital organs decreases- resulting in a form of mild shock. If left untreated, the victim may suffer from a heatstroke.

Heat and Sun Stroke- A life-threatening condition. The body's ability to produce sweat and cool itself stops working; body temperature can rise so high that brain damage and death may result if the victim is not treated quickly<sup>62</sup>.

#### 4.11.2.11. Urban:

Urban areas can suffer more from high temperatures than surrounding landscapes due to the Heat Island Effect, where built structures including roads and buildings absorb and re-emit the sun's energy more than natural landscapes. Urban areas can be 1-7°F warmer in the day and 2-5°F warmer during the night than outlying areas<sup>63</sup>. Trees and other vegetation provide shade and moisture, which keep areas cooler. In comparison, a parking lot absorbs heat and evaporates less water- leading to elevated temperatures. Side effects of living in urban heat islands can include higher home energy bills, increased exposure to air pollution, and higher risk

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<sup>61</sup> "Droughts: Things to Know" Water Science School, USGS

<sup>62</sup> 2015 plan

<sup>63</sup> U.S. Environmental Protection Agency. 2008. Reducing urban heat islands: Compendium of strategies. Draft. <https://www.epa.gov/heat-islands/heat-island-compendium>.



of heat-related illness. Urban heat islands tend to have higher greenhouse gas emissions and impaired water quality.

#### 4.11.2.12. Agriculture:

Severe drought can stress plants and disrupt normal growing cycles, leading to less productive crops and grazing pasture. This can cause many issues for ranchers, during droughts feed prices go up and cattle prices can plummet<sup>64</sup>.

Prolonged drought combined with areas of heavy agriculture can also exacerbate groundwater/aquifer depletion. When groundwater is pumped for crop irrigation (along with other uses) faster than precipitation can recharge the water storage, the water table will lower. If the water table drawdown is significant, wells can run dry in peoples' home, costs associated with pumping water increase, and in severe cases land subsidence may occur. This is an issue in Southwest and Great Plains states<sup>65</sup> and some areas of Chicago suburbs<sup>66</sup>, but is less of a concern for southern Illinois.

#### 4.11.2.13. Natural Landscapes:

Forested areas have increased risk of wildfires during droughts and extreme heat. Wildfires are necessary for some natural processes, but when they get out of control wildlife populations can drop to unhealthy levels, habitat loss can be great, and risk of fire spreading to human residences increases. Additionally, uncontrolled fires in natural areas may damage recreational areas such as campgrounds and picnic areas- leading to economic losses in the tourism industry.

Drought and excessive can severely harm freshwater habitats. Prolonged periods of both raise water temperature, increasing the risk of Harmful Algal Blooms (HABs). HABs in freshwater systems are usually a result of cyanobacteria, a type of blue-green algae that can reproduce, or bloom, rapidly in nutrient-rich warm waters such as ponds and reservoirs. Cyanobacteria occur naturally across the US, but HABs only occur under certain conditions. The other major factor that increases risk of HABs are fertilizer runoff from agricultural and urban areas.

Some but not all cyanobacteria produce toxins that cause skin irritation and can be deadly if ingested. Swimming and even playing on beaches are not recommended during HABs. Additionally, the EPA recommends waiting two weeks after a HAB ends before eating fish from the waterbody. Other side effects from HABs include lowered dissolved oxygen and increased turbidity of water, which can lead to die-offs of fish, invertebrates, and submerged freshwater plants. Drought can also dry up water bodies completely, with small streams and shallow wetlands being most at risk. This can result in loss of populations of freshwater organisms and

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<sup>64</sup> Larson, Debra "Drought Impacts on the Cattle Industry" University of Illinois Animal Sciences

<sup>65</sup> "Groundwater depletion across the nation" USGS factsheet, 2003.

<sup>66</sup> Mannix et al., "Groundwater Depletion in Chicago's Southwestern Suburbs" Illinois State Water Survey

altered community structure. The economic impacts from HABS can be significant, causing public beach closures and damaging fishery populations. One EPA report from Ohio estimated that a HAB caused an estimated loss of over \$37million from decreased tourism.

#### 4.11.3. Climate change

Evidence suggests that the frequency and severity of droughts in the US will increase with climate change; in the Midwest specifically, droughts are expected to occur in late summer months.<sup>67</sup> Increases in temperature, precipitation, and evaporation will continue in Illinois, leading to frequent and more intense floods and droughts<sup>68</sup>.

#### 4.11.4. Geographic Location and Historical Occurrences

There are 15 records of excessive heat in Franklin County from 2010-2022 and 23 records of drought from 1998-2012. One drought in southern Illinois lasting through the month of September in 2007 caused \$3,450,000 in crop damage across all of the counties affected<sup>69</sup>.

Southern Illinois is home to many lakes, often surrounded by agriculture fields; creating ideal conditions for HABS in late summer. Illinois EPA has a statewide HAB testing and monitoring program, but data with locations of specific blooms are not available from their webpage. IEPA recommends ceasing aquatic recreation activities when Microcystin levels are greater than 10ug/L.

#### 4.11.5. Risk

Franklin County has equal risk for heat waves and drought events. Excessive heat may be exacerbated in urban areas due to the heat island effect. HABS are most likely to occur in small ponds and lakes, or in shallow stagnant fingers of larger reservoirs. Drought and extreme heat do not have enough historical records to calculate an accurate probability, but they are expected to increase with climate change.

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<sup>67</sup> Angel, J. et al. 2018: Midwest. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II U.S. Global Change Research Program, Washington, DC, USA, pp. 872–940.

<sup>68</sup> "Climate Change in Illinois" Illinois State Water Survey/Prairie Research Institute

<sup>69</sup> NOAA Storm Events Database



## 4.12. Terrorism

### 4.12.1. Hazard Description

Terrorist attacks can take many forms, and stem from foreign or national groups or individuals. There are several types of terrorism that are potential threats to the United States<sup>70</sup>:

#### 4.12.1.14. Attacks in public places

This hazard includes active shooters, intentional vehicle crashes, bombs and any other method of mass attack.

#### 4.12.1.15. Bioterrorism

Bioterrorism involves the use of biological agents to harm or kill people, animals, or crops. Agents that may be used as biological weapons include bacteria, viruses, or other toxins.

The CDC maintains a list of potential biological weapons at

<https://emergency.cdc.gov/agent/agentlist.asp>

#### 4.12.1.16. Chemical attack

Similar to bioterrorism, this involves agents designed to harm people, animals, or crops. There are many different chemicals that may be toxic in vapor, liquid, or solid form.

#### 4.12.1.17. Explosions

Explosive devices can come in many sizes and may be carried by individuals (suicide bombers), in vehicles, or hidden and detonated remotely.

#### 4.12.1.18. Nuclear Explosions

These weapons use nuclear reactions to create explosions and may be incredibly destructive. Nuclear devices can be as large as missiles or small enough to be concealed and carried around.

#### 4.12.1.19. Radiological dispersion device

RDDs are designed to scatter sub-lethal amounts of radioactive material with conventional explosive devices.

#### 4.12.1.20. Other

Other acts of terrorism could include assassination, kidnapping, lynching, sabotage, and rioting.

### 4.12.2. Geographical Locations and Historical Occurrences

The events on September 11, 2001 was the deadliest single-day terrorist attack in U.S. history. There have been no large-scale attacks in the State of Illinois in recent decades; although gun violence continues to be an issue in many areas. It is difficult to report exact numbers of mass shootings in Illinois or for the whole country as definitions vary by agency. One report from USA

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<sup>70</sup> Ready.gov

Today states 350 “mass killings” occurred in the U.S. from 2006-2017, with 23 of the incidents being from Illinois<sup>71</sup>.

#### 4.12.3. Preparedness and survival

While it can be difficult to predict terrorist attacks, there are general steps that can be taken to stay safe. It is recommended to always have exit plans when outside of the home. This includes public places, work, and school. Suspicious packages should be reported instead of being opened. Seeking shelter and contacting law enforcement is the best course of action in the event of any attack. In the case of possible chemical, biological, or nuclear attacks it is imperative to find shelter and stay inside until it is announced safe from potential side effects<sup>72</sup>.

Schools and workplaces should have emergency plans in place in the event of any emergency, including terrorist attacks.

The Illinois Terrorism Task Force (ITTF) is an advisory body to the Governor, The Governor’s Homeland Security Advisor, and IEMA. They provide guidance for establishing and maintaining long term solutions to the threat of terrorism. The ITTF annual reports and other policies can be found at <https://www2.illinois.gov/iema/ITTF/>.

#### 4.12.4. Risk

ITTF, IEMA, and County EMA Officials are in charge of monitoring terrorism risk in Illinois. Mass shootings could occur anywhere at any time; and have happened in a variety of places across the United States, including schools, grocery stores, churches, and many other locations.

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<sup>71</sup> USA Today “Behind the Bloodshed” <https://www.gannett-cdn.com/GDContent/mass-killings/index.html#title>

<sup>72</sup> Ready.gov “Disasters and Emergencies”

## 4.13. Wildland Fires

### 4.13.1. Hazard Description

While not as severe or frequent as wildfires in the western United States, Illinois does experience both prescribed and unintentional wildland fire throughout the state. From 2002-2014, Illinois experienced an average of 57 fires per year with an average of 881 acres burned per year<sup>73</sup>. Wildfires are a naturally occurring phenomenon, and can be vital to ecosystem health. Fire is an especially important tool in managing Illinois's remnant tallgrass prairies. The term "wildfire" is used to describe any wildland fire that is unwanted and unplanned. Wildfire usually starts from human caused activities, mostly campfires that spread rapidly. They can also start naturally under the right conditions, or stem from prescribed management fires that get out of control. The extent of a wildfire is generally defined by the number of acres that burned. This is influenced by weather, topography, and amount of fuel available.

### 4.13.2. Geographic Location and Historical Occurrences

The most recent wildfire to occur in southern Illinois occurred in March 2021 in the Shawnee National Forest Fountain Bluff area. The fire burned about 27 acres. Other small wildfires have occurred in the Shawnee throughout the years, and prescribed management burns take place seasonally, with schedules and alerts available from the National Forest webpage.

### 4.13.3. Risk

Franklin County has a 75% risk of wildfire to homes by the state ranking system, and 19% by the national rank. There is an 89% wildfire hazard potential by state rank and a 15% wildfire hazard potential by national rank<sup>74</sup>.

Risk is highest in camping areas and along the Wildland Urban Interface (WUI). Risk is elevated during droughts and high wind. Many state and federal natural areas have fire danger signs posted that are adjusted daily.

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<sup>73</sup> "Wildfires" Living With Weather, mrcc.illinois.edu

<sup>74</sup> "Community Wildfire Defense Grant Risk Dataset" Wildfire Risk to Communities, 2022.

## 4.14. Cyberattacks

### 4.14.1. Hazard Description

Cyberattacks are any unauthorized attempt to access or damage a computer or network system<sup>75</sup> The extent and impacts can vary widely depending on the motivations of the attacker. Common results of a cyberattack include:

- Monetary theft
- Identity theft including loss of personal, medical, business, and/or financial records
- Loss of access to computers, phones, and Bluetooth devices

Cyberattacks can be conducted on a large scale and are also a threat to businesses and government agencies. The Cybersecurity & Infrastructure Security Agency (CISA) (A Federal agency within the Department of Homeland Security formed in 2018) states that a growing concern in the United States is the cybersecurity of critical infrastructure. Facilities and infrastructure such as power grids and transportation routes are linked to cyber space in a number of ways, and our growing reliance on such technologies also increases risk of cyberattacks.

One method of cyberattack that is becoming increasingly common is the use of ransomware. This is a type of malware used to encrypt files, or render them unusable. These cyber attackers will then demand a ransom in return for decryption of the files, often with a threat of selling or releasing the files to another party<sup>76</sup>. Cybersecurity continues to be a top priority for the current administration, and bipartisan legislation is being written to require mandatory federal reporting of all ransomware attacks, although there are ongoing debates as to whether or not the U.S. should ban ransom payments<sup>77</sup>

CISA provides guides for business and local government leaders to learn about and begin implementing cybersecurity protocols within their organizations. The CISA Cyber Essentials Starter Kit includes six major actions that organizations should provide to build a culture of cyber readiness<sup>78</sup>:

- Leader: drive cybersecurity strategy and investment
- Staff: develop security awareness and vigilance
- Systems: protect critical assets and applications
- Surroundings: ensure only authorized users have access to digital workplaces
- Data: undergo scheduled backups to avoid data losses

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<sup>75</sup> Ready.gov Cybersecurity

<sup>76</sup> CISA "Ransomware Guidance and Resources"

<sup>77</sup> Bajak, Frank "Ransomware gangs get paid off as officials struggle for fix" Associated Press, June 21, 2021.

<sup>78</sup> Cybersecurity & Infrastructure Security Agency "Cyber Essentials Start Kit: The Basics for Building a Culture of Cyber Readiness" 2021.

- Crisis Response: develop and test incident response plans to limit damages and restore normal operations quickly

In addition to federal resources, the Illinois Attorney General's office has a data breach reporting system for businesses and governments, as well as an identity theft hotline for all Illinois residents.

#### 4.14.2. Geographic Location and Historical Occurrences

Cyberattacks are a continuous national threat. They can occur at any time to individuals, businesses, and government agencies. Cases of identity theft more than doubled from 2019-2020, with a 2,920% increase in cases of victim information being used to apply for government benefit programs<sup>79</sup>. According to the EMSISoft State of Ransomware in the U.S. report, in 2020 there were ransomware attacks on 113 federal, state, and municipal governments, 560 healthcare facilities, and 1,681 schools, colleges, and universities<sup>80</sup>. The report states that these figures are likely understatements. They also state that the data come from multiple sources, although these sources are not listed.

The most recent cyberattack in the U.S. that gained national attention was the ransomware attack on Colonial Pipeline in May of 2021. The company provides gasoline to 13 states and Washington D.C., with 260 delivery points along the pipeline route. A criminal group locked up the pipeline company's corporate network. The company went offline and shut down their pipeline upon learning of the attack, and later paid a \$4.4 million ransom to decrypt their data network. The day following the pipeline shutdown, over 9,500 gas stations ran out of fuel; the company was able to resume operations in a little less than a week<sup>81</sup>.

Some recent cyberattacks in the state of Illinois are listed below:

- 2017- Data from Marion County Jail was removed including names, addresses, and social security numbers of former inmates<sup>82</sup>
- 2021- SIU School of Medicine lost patient data in the cyber-attack on Accellion's File Transfer Appliance<sup>83</sup>
- April-May 2021- Ransomware attack on the IL Attorney General's office, loss of case files and court records<sup>84</sup>

<sup>79</sup> Skiba, Katherine, "Pandemic Proves to Be Fertile Ground for Identity Thieves" AARP, February 5, 2020; Federal Trade Commission Consumer Sentinel Network Data Book 2020

<sup>80</sup> EMSISOFT Malware Lab "State of Ransomware in the US: Report and Statistics for Q1 and Q2 2020" July 8, 2020

<sup>81</sup> Bussewitz, Cathy, "Colonial Pipeline confirms it paid \$4.4M to hackers" May 19, 2021 Associated Press.

<sup>82</sup> "MARION COUNTY JAIL ADVISES FORMER INMATES OF DATA BREACH, POSSIBLE IDENTITY THEFT" X95radio news

<sup>83</sup> Davis, Jessica "Trillium, SIU Medicine Added to Tally of Accellion FTA Breach Victims" HealthITSecurity.com

<sup>84</sup> Goudie, Markoff, Tressel, and Weidner, "Cyber attack on Illinois Attorney General's office appears far worse than first thought", May 4, 2021, abc7chicago news

#### 4.14.3. Risk

Cyberattacks can be difficult to predict and may be targeted at individuals, businesses, or government offices. Systems that do implement cybersecurity protocols, or have outdated, weaker protection are more at risk.

## 4.15. Near Earth Object Impact

### 4.15.1. Hazard Description

Near Earth Objects, or NEOs, are any small Solar System Body that comes into proximity with Earth. This can include comets, asteroids, and meteoroids. NEOs are considered potentially hazardous if they are over 459 feet in diameter and their orbit crosses the orbit of Earth. In general, anything smaller than that is expected to burn up in the atmosphere<sup>85</sup> (although small meteorites do sometimes make contact with the surface).

For clarification a meteoroid is a very small solar system body, usually a piece that broke off of a comet or asteroid. A meteor is a meteoroid that enters Earth's atmosphere, and a meteorite is a meteor that lands on the surface.

The United States and other nations have been undergoing projects to scan for and assess the risk of NEOs since the 1990s under the umbrella term "Spaceguard".<sup>81</sup> The National Aeronautics and Space Administration (NASA) Center for NEO Studies (CNEOS) utilizes Sentry, "a highly automated collision monitoring system that continually scans the most current asteroid catalog for possibilities of future impact with Earth over the next 100 years."<sup>86</sup> NEOs discovered are ranked on the Palermo and Torino scales. These scales give the NEO a hazard rating based on the probability of impact and the estimated damage. As of January 2019, 19,470 NEOs have been discovered; of these 107 are comets and the rest are asteroids<sup>87</sup>.

### 4.15.2. Geographic Location and Historical Occurrences

There are over 160 known impact craters on the surface of the Earth. Two notable locations are Meteor Crater in Arizona and the Chicxulub Crater in Mexico. Meteor Crater was caused an estimated 50,000 years ago by a meteorite around 150 ft in diameter. The crater is 550 ft deep and nearly a mile wide. The Chicxulub Crater is located in the Gulf of Mexico, just off the coast of the Yucatán Peninsula. The asteroid which caused the crater hit Earth an estimated 66 million years ago, and is widely accepted as the cause of the mass extinction event which led to the demise of the non-avian dinosaurs.

There have been 10 meteorites in Illinois, four from observed falls and the rest were discoveries<sup>88</sup>. The largest of these is known as the Tilden meteorite, which fell on July 13, 1927. It split into three fragments while still in the atmosphere, and landed in three separate counties. The largest of the fragments weighed 110 pounds<sup>89</sup>. The most recent observed meteorite fall occurred in 2003.

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<sup>85</sup> NASA.gov "NASA on the Prowl for Near-Earth Objects" May 25, 2004.

<sup>86</sup> "Sentry: Earth Impact Monitoring", NASA Jet Propulsion Laboratory, Center for Near Earth Object Studies.

<sup>87</sup> NASA CNEOS "Discovery Statistics"

<sup>88</sup> "Meteorites from Illinois" Washington University in St Louis: Earth and Planetary Sciences

<sup>89</sup> Cargile, Clint, "This Week In Illinois History: Stars Fell On Illinois (July 13, 1927)" WNJI New, Northern Public Radio, July 12, 2021.

#### 4.15.3. Risk

NEO impact could occur anywhere, the county has equal risk. Table 4.35 below shows approximate impact probability (interval) and damage for different size classes of NEOs. MT stands for megatons, which refers to the chemical energy release of a million tons of TNT. Actual risk varies greatly, data on individual NEOs can be viewed from the “Impact Risk Data” table from the CNEOS website.

Table 4.35 - Approximate Average Impact Interval and Impact Energy for NEOs

Type of Event	Characteristic Diameter of Impacting Object	Approximate Impact Energy (MT)	Approximate Average Impact Interval (years)
Airburst	25m	1	200
Local scale	50m	10	2000
Regional scale	140m	300	30,000
Continent scale	300m	2,000	100,000
Below global catastrophe threshold	600m	20,000	200,000
Possible global catastrophe	1km	100,000	700,000
Above global catastrophe threshold	5km	10,000,000	30million
Mass extinction	10km	100,000,000	100million

Source: The table is adapted from Table 2.1 in “Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies” published by the National Academy of Sciences in 2010



## 4.16. Utility Disruptions and Power Outages

### 4.16.1. Hazard Description

This hazard includes short or long-term loss of essential utilities. Essential utilities include electricity, natural gas, potable water supply, wastewater treatment, and communication services (phone and internet). Constellation Energy Company lists the following as the 10 most common causes of power outages<sup>90</sup>:

- Severe weather
- Motor vehicle accidents
- Equipment failure
- Fallen trees
- Wildlife interference
- High energy demand
- Construction work damage
- Public damage (accidental and vandalism)
- Cyberattacks
- Planned outages

Impacts from utility disruptions can range from temporary inconveniences to a widespread public crisis. Loss of power during heat waves or winter storms can lead to weather related deaths. Loss of access to clean water for extended periods can lead to sickness and death. Inoperable communication towers and traffic signals can affect the efficiency of first responders. Local economies may suffer from loss of revenue and inability to pay workers during business closures.

### 4.16.2. Geographic Location and Historical Occurrences

Utility companies do not make historic records of outages and other issues publicly available. However, residents can search for and report currently active outages from both Ameren Illinois and Egyptian Electric Cooperative. Municipal water companies will publicly post current boil water orders when they occur. Additionally, the IEPA requires water suppliers to inform their customers of water outages and maintenance events that might disturb sediments containing lead.

### 4.16.3. Risk

Since power outages and other utility disruptions can be caused by a variety of factors, it is difficult to determine risk. In general risk of this hazard is highest during severe weather, and utility lines along highly trafficked roads have a higher risk of being damaged than those in more rural areas. There is also higher risk for older equipment to fail and cause outages.

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<sup>90</sup> "10 common causes of power outages" Constellation, 2021.

## 4.17. Landslides

### 4.17.1. Hazard Description

Parts of Illinois have a medium to high landslide potential. While these events in Illinois are usually on a smaller scale than landslides in the west, they have been known to cause significant property and infrastructure damage. Most landslides in Illinois are not life threatening. ISGS defines 6 types of landslides that occur in our state<sup>91</sup>:

- **Rock falls**- These occur when blocks of rock fall freely from a steep slope or cliff. Blocks of loess or till that fall from an undercut bluff face are also considered rock falls. Rock falls are most common along bedrock bluffs of the Mississippi river.
- **Slumps** - Slumps occur when a mass of rocks or earth move down along one or more buried failure planes. Almost 60% of recorded landslides in IL were slumps.
- **Rock slump** – usually a permeable bedrock such as limestone sliding on underlying impermeable bedrock, such as shale.
- **Earth slump** – fine textured glacial materials that slide after failure planes form.
- **Earth slumps on bedrock**- Mass of glacial material sliding down bedrock – often shale, usually caused by water percolating the glacial material until reaching the impermeable shale.
- **Earth flows**- Any flow of sand or unconsolidated earth material
- **Rock creeps**- Blocks of rock that slide slowly over a gentle slope, generally very slow and takes place over the course of years.

### 4.17.2. Geographic Location and Historical Occurrences

The most recent inventory of landslides in southern Illinois was completed in 1992. During this inventory, ISGS identified 221 landslides that occurred along the Mississippi and Ohio Rivers from Chester to Olmstead<sup>92</sup>. Most of the identified landslides were considered ancient landforms that had occurred during seismic activity of the New Madrid Seismic Zone. Besides earthquakes, heavy rainfall and alteration of risk areas, such as construction projects along bluffs and shorelines can also lead to landslides in southern Illinois.

### 4.17.3. Risk

Risk of landslide depends on a number of factors including depth and type of bedrock, depth and type of materials overlaying bedrock, slope angle, precipitation, freeze and thaw cycles, and vegetation. Most landslides in Illinois occur near Lake Michigan, and the Mississippi, Illinois, and Ohio Rivers. Franklin County has a low to medium risk of landslides, see figure 4.18 for a map of landslide probability in the state.

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<sup>91</sup> Killey, Hines, and DuMontelle “Landslide Inventory of Illinois” Illinois Department of Energy and Natural Resources, State Geological Survey Division, 1985.

<sup>92</sup> Wen June S, “Inventory of landslides in southern Illinois near the New Madrid Seismic Zone and the possible failure mechanism at three sites”, Journal Volume: 24:7; Conference: 1992 annual meeting of the Geological Society of America (GSA), 1992.

Figure 4.18: Landslide potential in Illinois



Source: ISGS

## 4.18. Invasive Species and Infestations

### 4.18.1. Infestations

An infestation usually refers to a home, business, or farm being overrun or invaded by pests or parasites. This hazard can be caused by native and nonnative species. Home infestations can have a risk of disease spread from the pests. Infestations in agriculture can take many forms and may result in diseased crops or significant loss of crop from pests feeding in large numbers.

The CDC lists the following household pests as potential disease vectors and human health hazards<sup>93</sup>:

- Rodents
- Cockroaches
- Fleas
- Flies
- Fire ants
- Mosquitos
- Termites are also listed as a household threat for the amount of property damage an infestation can cause. In the U.S., termites cause more property damage annually than fires and windstorms combined.

#### 4.18.1.21. Agricultural Infestations

The University of Illinois State Water Survey has a degree day calculator and seasonal maps for estimating peak emergence of common agriculture invertebrate pests, see table 4.36<sup>94</sup>:

Other animals that may cause enough crop damage to be considered an infestation are feral hogs, white-tailed deer, rodents, and birds. Fungal or viral infections and weeds may also be considered agricultural infestations.

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<sup>93</sup> Marshall, Carter L MD "Chapter 4: Disease Vectors and Pests" CDC Healthy Housing Reference Manual

<sup>94</sup> "Pest Degree Day Calculators" Illinois State Water Survey: Prairie Research Institute

Table 4.36 – Agricultural Invertebrate Pests of Illinois

Pest	Native Species?
Alfalfa Weevil	no
Armyworm	yes
Bean Leaf Beetle	yes
Black Cutworm	yes
Corn Earworm	yes
Corn Rootworm	yes
European Corn Borer	no
Stalk Borer	yes
Two-spotted Spider Mite	found worldwide, original geographic distribution thought to be Eurasia
Western Bean Cutworm	native to western U.S., has been spreading east
Apple Maggot	yes
Codling Moth	found worldwide, origins unclear
Colorado Potato Beetle	native to Rocky Mtns
Emerald Ash Borer	no
European Red Mite	no
Fruit Tree Leafroller	yes
Grape Berry Moth	no
Oriental Fruit Moth	no
Peachtree Borer	yes
Potato Leafhopper	yes
San Jose Scale	no
Spotted Wing Drosophillia	no
Squash Vine Borer	yes
Brown Marmorated Stink Bug	no
Corn Flea Beetle	yes
Japanese Beetle	no

Source: University of Illinois State Water Survey

#### 4.18.2. Invasive Species

Invasive species are any organism non-native in an ecosystem whose introduction causes or is likely to cause harm to the economy, environment, or human health (Executive Order 13112). Illinois defines exotic weeds as plants not native to North America that when planted, spread vegetatively or naturalize and degrade natural communities, reduce the value of fish and wildlife habitat, or threaten Illinois endangered or threatened species (525 ILCS 10).

Invasive plants and invertebrates can cause significant property damage, decrease crop yields, decrease value of timber stands, as well as disrupt natural communities and impact forest health. Similarly, aquatic invasive species can alter ecosystem structure, decrease water quality, and damage infrastructure. Zebra mussels can be particularly destructive; they breed profusely (a single female may produce 1million eggs/year) and attach to any hard surface in large clusters. Zebra mussels can clog intake pipes of water treatment and power facilities, costing millions of dollars in repair and cleanup<sup>95</sup>.

Adopted in 2016, The National Invasive Species Management Plan identifies actions to prevent, eradicate, and control invasive species. It also lists guidelines for restoring ecosystems and other areas affected by invasive species<sup>96</sup>.

Illinois has many exotic and invasive species. The Illinois Exotic Weed Act lists 26 species of plant that are illegal to buy, sell, offer to sell, distribute or plant seeds, plants, or parts of plants unless issued a permit by IDNR (Table 4.37). There are many other exotic and invasive plants in Illinois that are not covered by this law, as well as exotic and invasive animals (Tables 4.38, 4.39) Note that these tables may not be complete lists as many species are lacking observation data; additionally, game and agriculture species that are intentionally released (such as honeybees and brown trout) are not included.

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<sup>95</sup> "Exotic Aquatic Invertebrates in Illinois" Illinois Department of Natural Resources.

<sup>96</sup> "National Invasive Species Management Plan", USDA National Invasive Species Information Center

Table 4.37 - Plants Listed in the Illinois Exotic Weed Act

Common Name	Scientific Name
Amur honeysuckle	<i>Lonicera maackii</i> (Rupr.) Herder
Autumn olive	<i>Elaeagnus umbellata</i> Thunb.
Bohemian knotweed	<i>Reynoutria x bohemica</i> Chrtek & Chrtková
Buckthorn	<i>Rhamnus arguta</i> Maxim.
Chinese buckthorn	<i>Rhamnus utilis</i> Dcne.
Common buckthorn, European buckthorn	<i>Rhamnus cathartica</i> L.
Dahurian buckthorn	<i>Rhamnus davurica</i> Pallas
Giant hogweed	<i>Heracleum mantegazzianum</i> Sommier & Levier
Giant knotweed	<i>Reynoutria sachalinensis</i> F. Schmidt ex Maxim.
Glossy buckthorn	<i>Frangula alnus</i> Mill.
Japanese buckthorn	<i>Rhamnus japonica</i> Maxim.
Japanese honeysuckle	<i>Lonicera japonica</i> Thunb.
Japanese knotweed	<i>Reynoutria japonica</i> Sieb. & Zucc.
Kudzu	<i>Pueraria montana</i> var. <i>lobata</i> (Willd.) Maesen & S. Almeida
Lesser celandine, fig buttercup	<i>Ficaria verna</i> Huds.
Morrow's honeysuckle	<i>Lonicera morrowii</i> Gray
Multiflora rose	<i>Rosa multiflora</i> Thunb.
Oriental bittersweet	<i>Celastrus orbiculatus</i> Thunb.
Poison hemlock	<i>Conium maculatum</i> L.
Purple loosestrife	<i>Lythrum salicaria</i> L.
Russian olive	<i>Elaeagnus angustifolia</i> L.
Sweet breath of spring	<i>Lonicera fragrantissima</i> Lindl. & Paxton
Tamarisk	<i>Tamarix</i> spp. L.
Tatarian honeysuckle	<i>Lonicera tatarica</i> L.
Teasel	<i>Dipsacus</i> spp. L.
Thorny olive	<i>Elaeagnus pungens</i> Thunb.

Table 4.38 -Terrestrial Invasive Animal Species

Common Name	Scientific Name
wild boar (feral hog)	<i>Sus scrofa</i>
Eurasian collard dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>
emerald ash borer	<i>Agrilus planipennis</i>
Japanese beetle	<i>Popillia japonica</i>
nightcrawler	<i>Lumbricus terrestris</i>
southern worm	<i>Aporrectodea trapezoides</i>
woodland white worm	<i>Octolasion tyrtaeum</i>
soybean aphid	<i>Agrilus planipennis</i>
Asian longhorned beetle	<i>Anoplophora glabripennis</i>
gypsy moth	<i>Lymantria dispar</i>

Sources: IDNR, Invasive.org

Table 4.39 - Aquatic Invasive Animal Species

Common Name	Scientific Name
zebra mussel	<i>Dreissena polymorpha</i>
Asian clam	<i>Corbicula fluminea</i>
spiny water flea	<i>Bythotrephes longimanus</i>
rusty crayfish	<i>Orconectes rusticus</i>
bighead carp	<i>Hypophthalmichthys nobilis</i>
Silver carp	<i>Hypophthalmichthys molitrix</i>
common carp	<i>Cyprinus carpio</i>
goldfish	<i>Carassius auratus</i>

Sources: IDNR, Invasive.org

#### 4.18.3. Geographic Location and Historical Occurrences

There are not detailed databases that track outbreaks and spread of every pest or invasive species. Agricultural resources and technical assistance can be found from various groups, including the National Resources Conservation Service (NRCS) and University of Illinois Extension offices.

The IL Department of Natural Resources and National Forest Service provide information about invasive species that harm our native ecosystems, and occasionally provide updates on current projects to manage or remove invasives.

#### 4.18.4. Risk

Risk of infestation or spread of invasive species is variable. Factors include location, time of year, and weather.



## 5. Mitigation Strategies

“The purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.” Stafford Act Title 44, Chapter 1, Part 201.

This chapter will review current mitigation strategies and ordinances, and list new suggestions for further hazard mitigation. The Franklin County Planning Team worked to develop these strategies specific to each jurisdiction based on the MHMP goals listed below:

### Goal 1: Lessen the impacts of hazards to new and existing infrastructure

<i>Objective:</i>	Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.
<i>Objective:</i>	Equip public facilities and communities to guard against damage caused by secondary effects of hazards.
<i>Objective:</i>	Minimize the amount of infrastructure exposed to hazards.
<i>Objective:</i>	Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.
<i>Objective:</i>	Improve emergency sheltering in Franklin County.

### Goal 2: Create new or revise existing plans/maps for Franklin County

<i>Objective:</i>	Support compliance with the NFIP for each jurisdiction in Franklin County.
<i>Objective:</i>	Review and update existing, or create new, community plans and ordinances to support hazard mitigation.
<i>Objective:</i>	Conduct new studies/research to profile hazards and follow up with mitigation strategies.

### Goal 3: Develop long-term strategies to educate Franklin County residents on the hazards

<i>Objective:</i>	Raise public awareness on hazard mitigation.
<i>Objective:</i>	Improve education and training of emergency personnel and public officials.

### 5.1. National Flood Insurance Program Statistics

The National Flood Insurance Program (NFIP) is a federal program managed by FEMA and delivered by a network of multiple insurance agencies. Flood insurance is available to businesses, home & property owners, and renters in communities that participate in the NFIP. Homes and businesses in high-risk flood areas with government backed mortgages are required to have flood insurance. Flood insurance is also required for some other federal programs, including qualifying for flood-related disaster relief funds and qualifying for grants through the Flood Mitigation Assistance (FMA) Program. Franklin County participates in the NFIP, table 5.1 shows the municipalities that also participate.

Table 5.1 – NFIP participation by municipality

Municipality	Participation	Reason for Non-participation	Current FIRM Effective Date
Benton	Y	-	11/18/2009
Buckner	N	Suspended by FEMA	11/18/2009
Christopher	Y	-	11/18/2009
Ewing	N	Not within SFA	11/18/2009
Freeman Spur	Y	-	11/18/2009
Hanaford	Y	-	11/18/2009
Macedonia	N	Not within SFHA	11/18/2009
North City	N	No residential/business structures within SFHA	11/18/2009
Orient	N	No structures within SFHA	11/18/2009
Royalton	Y	-	11/18/2009
Sesser	Y	-	11/18/2009
Thompsonville	N	No structures within SFHA	11/18/2009
Valier	Y	-	11/18/2009
West City	Y	-	11/18/2009
West Frankfort	Y	-	11/18/2009
Zeigler	Y	-	11/18/2009

### 5.1.1. Community Rating System (CRS)

The Community Rating System (CRS) is a federal incentive program that offers discounts to communities in the NFIP whose floodplain management requirements and practices exceed the minimum standards set forth in the NFIP. The goals of the program are as follows<sup>97</sup>:

- Reduce and avoid flood damage to insurable property
- Strengthen and support the insurance aspects of the National Flood Insurance Program
- Foster comprehensive floodplain management

Currently, Carbondale in Jackson County is the only community in southern Illinois with CRS status.

### 5.1.2. Repetitive Loss Structures

FEMA defines repetitive loss structures as having at least two paid flood losses over \$1,000 each in any 10-year period since 1978. Table 5.2 shows the summary of repetitive loss structures in Franklin County from 1985-2021.

Table 5.2 – Repetitive Loss Structures

Jurisdiction	Occupancy Type	Number of Losses	Total paid
WEST FRANKFORT	SINGLE FMLY	2	4290.47
W FRANKFORT	OTHER RESID	3	8848.52
WEST FRANKFORT	SINGLE FMLY	3	15069.68
WEST FRANKFORT	SINGLE FMLY	2	45002.79
WEST FRANKFORT	SINGLE FMLY	2	93637.94
WEST FRANKFORT	SINGLE FMLY	2	29779.76
WEST FRANKFORT	SINGLE FMLY	1	42665.8
TOTAL		15	\$239,294.96

Source: IEMA

## 5.2. Jurisdiction Ordinances

Hazard Mitigation related ordinances, such as zoning, burning, or building codes, have the potential to reduce the risk from known hazards. These types of regulations provide many effective ways to address resiliency to known hazards. Table 5.3 lists Franklin County's current ordinances that directly pertain, or can pertain, to hazard mitigation. It is important to evaluate the local building codes and ordinances to determine if they have the ability to reduce potential damages caused by future hazards.

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<sup>97</sup> "Community Rating System", FEMA.gov

Table 5.3 – Jurisdictional Ordinances

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg Standards
Franklin Co.	Mar-65	N/A	Apr-08	N/A	N/A	N/A	N/A	N/A
Benton	Mar-79	Sep-65	May-72	N/A	May-72	Oct-88	N/A	Jan-69
Buckner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Christopher	Jul-64	Dec-66	N/A	N/A	N/A	Oct-92	N/A	May-63
Ewing	Jul-67	N/A	N/A	N/A	N/A	May-01	N/A	N/A
Freeman Spur	N/A	N/A	N/A	N/A	N/A	2005	N/A	2005
Hanford	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Macedonia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North City	N/A	1986	N/A	N/A	N/A	1986	N/A	1986
Orient	Aug-68	N/A	N/A	N/A	N/A	Mar-98	N/A	N/A
Royalton	Jul-64	N/A	N/A	N/A	N/A	N/A	N/A	Mar-07
Sesser	Jul-64	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thompsonville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Valier	May-68	Oct-73	N/A	N/A	N/A	Aug-93	N/A	N/A
West City	Jul-64	Oct-70	N/A	N/A	N/A	Nov-90	N/A	2003
Frankfort	Jan-61	1962	1992	N/A	1992	1972	N/A	1992
Zeigler	Jul-64	Dec-72	Dec-72	N/A	N/A	Nov-86	N/A	Dec-72

### 5.3. New Mitigation Strategies

The following tables display all hazard mitigation strategies proposed by the Franklin County Planning Team. Strategies were created with county goals and FEMA STAPLEE criteria. Strategies from the 2015 Plan are noted in the tables. No strategies from 2015 have been removed.

The timeline for these projects is based on priority ranking and subject to availability of funding. Jurisdictions are strongly encouraged to apply for grants upon final Plan review and adoption, however it is not a requirement of the Plan that these mitigation strategies are completed.

High priority: 1-3 years, Medium Priority: 4-6 years, Low Priority: 7-10 years

For details on specific grant programs, see appendix 6.

Table 5.4 - FEMA STAPLEE criteria

<b>S</b> ocial	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
<b>T</b> echnical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
<b>A</b> dministrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
<b>P</b> olitical	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
<b>L</b> egal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
<b>E</b> conomic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
<b>E</b> nvironmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Source: FEMA

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
All Hazards							
AH1	<b>Promote Disaster Resilience Through Workshops, Education Materials, and Planning Guides:</b> Various agencies have implemented forms of this strategy. Local resources have been used to target and inform the resident population. Pandemic education and outreach was conducted the year prior to the 2009 H1N1 pandemic and continued heavily throughout the response by Franklin-Williamson Bi-County Health Dept. (FWBCHD). Education and outreach continues by FWBCHD and various community partners. Local, state and federal sources have been used in past and current pandemic and other disaster education. Additional funding will be sought from local, state and federal sources.	Franklin-Williamson Bi-County Health Dept., Franklin County EMA, Schools	Ongoing	I,s,f	High	from 2015 MHMP	IEMA/FEMA Preparedness grant/EMPG
AH2	<b>Continue liaison groups that meet regularly to discuss hazard mitigation:</b> These groups meet on a regular basis to discuss hazard mitigation. Local funding will be used to continue these groups which help prepare Franklin Hospital for a hazard.	Franklin Hospital	Ongoing	I	High	from 2015 MHMP	
AH3	<b>Establish local emergency planning committee:</b> LEPC meets on quarterly basis to incorporate all organizations in hazard planning. Local funding will be used to organize these groups which help prepare Franklin Hospital for a hazard.	Franklin County	Ongoing	I	High	from 2015 MHMP	
AH4	<b>Enhance emergency communication system infrastructure:</b> RLCD will seek funding to improve communications between pump stations and the control room at the plant. This communication has been frequently disrupted during severe weather.	RLCD	Proposed	I,s,f	Medium	from 2015 MHMP	FMA, BRIC, USDA or IEPA water program
AH5	<b>Warning system expansions:</b> Plan and construct additional locations of public warning and information. Outdoor warning stations and information locations	Franklin County	Proposed	I,s,f	Medium	from 2015 MHMP	IEMA/FEMA Preparedness grant/EMPG
AH6	<b>Improve Emergency Response Training, staff, resources, and equipment:</b> Franklin County EMA and other jurisdictions will oversee the implementation of this plan. If appropriate funding is found, training will begin within two years.	RLCD, Franklin County EMA, Franklin Hospital	Proposed	I,s,f	High	from 2015 MHMP	IEMA/FEMA Preparedness grant/EMPG, DOT Safety grant
AH7	<b>Develop a Vulnerable Population List:</b> Develop list of people who may need assistance during natural disasters; and those that are a priority for power restoration (homes where people require power for medical equipment, etc. should have first priority during outages following critical facilities) The Franklin-Williamson Bi-County Health Dept. (FWBCHD) has a list of resources identified within the community that may be helpful in addressing functional/access needs. FWBCHD shall explore the vulnerable population list project underway with the Disaster Risk Reduction Steering Committee in Jackson County with assistance from Southern Illinois University.	Franklin-Williamson Bi-County Health Dept.	Ongoing	I	High	from 2015 MHMP	Local funds

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
AH8	<b>City Hall/ Police Department update:</b> City of Sesser will seek funding to update City Hall which houses the PD and unified command center. Facility will have a community safe room, well equipped emergency operations center, and new tornado sirens.	City of Sesser	Proposed	L,s,f	High	From 2015 MHMP	BRIC, USDA
AH9	<b>Mulkeytown water tower:</b> Mulkeytown will seek funding to replace old tower which is unable to hold the recommended 3 days' worth of water. The community is unable to maintain and keep up the existing 40-year-old tower. The new, larger water tower will better serve the community. Funding will mainly be sought from outside sources.	Mulkeytown Water District, Franklin County	Proposed	l,s,f	Medium	from 2015 MHMP	BRIC, DRA, USDA or IEPA water program
AH10	<b>Secure Critical Infrastructure:</b> City of Sesser will seek funding to improve critical facilities including the outdated sewer system, inadequate police station, and City Hall. The county will also seek funding to improve structures elsewhere. This may include infrastructure located above and below ground.	Franklin County, City of Sesser, USDA, DCEO	Proposed	l,s,f	High	from 2015 MHMP	BRIC, DRA, USDA, Infrastructure Bill programs
AH11	<b>Retrofit/Harden Critical Facilities and Utilities:</b> The Franklin-Williamson Bi-County Health Dept. (FWBCHD) will seek federal funding to harden the FWBCHD building. Franklin Hospital will procure federal funding to sustain or harden critical building infrastructure of hospital. Sesser will harden the Public Works Facility. SIH would like to retrofit existing facilities to serve surge healthcare needs in the event of mass casualties. Funding has not been secured as of 2015. Implementation, if funding is available from PDM or HMGP, is forecasted to be initiated within approximately one year. Franklin County will seek to harden critical government facilities.	Franklin-Williamson Bi-County Health Dept., LEPC, and Hospital, Franklin County EMA	Proposed	l,s,f	High	from 2015 MHMP	BRIC
AH12	<b>Equip critical facilities with back-up generators:</b> RLCD will seek funding for a back-up generator for the water and sewer plant and a portable back-up generator to be shared between pump stations. Thompsonville CUSD will seek funding to equip each building with a back-up generator. Franklin Hospital will obtain needed generators and fuel to sustain the facility. Franklin County will seek to obtain generators and fuel to sustain facilities.	RLCD, Thompsonville CUSD #174, Franklin Hospital, Franklin County	Proposed	l,s,f	High	from 2015 MHMP	BRIC, IEMA/FEMA Preparedness grant
AH13	<b>Supply all critical facilities with basic survival gear, food, and water:</b> Thompsonville CUSD will seek funding to replace some items in emergency backpacks distributed throughout the school in the classrooms. Franklin Hospital will seek funding to have adequate supplies for employees and patients.	Rend Lake College, Thompsonville CUSD #174, Franklin Hospital, Franklin County	Proposed	f	High	from 2015 MHMP	IEMA/FEMA Preparedness grant, IDPH
AH14	<b>Construct bypass water main around swamps, rivers, and interstate:</b> RLCD will seek funding to build a water main bypass to allow better access for repairs in emergency situations. The current location of the water main has limited access.	RLCD	Ongoing	l,s,f	High	from 2015 MHMP	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
AH15	<b>Stockpile and create an inventory of emergency parts and pipe to respond to sudden failures:</b> RLCD will seek funding to establish a stockpile of parts along with a mutual aid agreement to supply emergency parts and pipe for sudden and high priority failures.	RLCD, all local communities, and Water District	Proposed	I,s,f	High	from 2015 MHMP	Water COADs
AH16	<b>Develop mutual aid agreements:</b> Franklin Hospital will seek funding to maintain existing and add new mutual aid agreements between various public and private entities to be used in disasters	Franklin Hospital, LEPC	Ongoing	I,s,f,p	High	from 2015 MHMP	IEMA Preparedness Funding, DOT ALERT
AH17	<b>Identify and procure backup water supply:</b> Ensure water supply for laboratory equipment and facility public usage by mutual aid agreements	Franklin Hospital, LEPC	Ongoing	I,s,p	High	from 2015 MHMP	
AH18	Keep emergency communication systems up to date and in good working order. Keep backup generator and supplies in working order; list temporary shelters.	Municipalities, utility departments, County EMA	Ongoing	I,s,f	High	Jerome Kopec (Utility Superintendent of Sesser)	
AH19	Keeping written/photo/video records of key infrastructure maintenance. These records are vital in the event a disaster damages infrastructure, there are records that the damage was due to the event and not negligence, and can be reported to FEMA accurately in assistance applications	IDOT, Road Commissions, Levee Commissions, Dam Personal, Water Plant managers, etc	Proposed/Ongoing	I,s,f,p	High	IEMA Downstate Disaster workshop 2022	This would likely be part of normal operating budgets for various agencies
AH20	Forming & training local damage assessment teams and COADs (Community Organizations Active in Disaster)	IEMA, County EMA, Community Members	Proposed	I,s,f,p	High	IEMA Downstate Disaster workshop 2022	IEMA Preparedness Funding, DOT ALERT
AH21	Saving emergency funds at the county and municipal level to increase resiliency should a disaster occur.	County & Municipal Governments	Proposed/Ongoing	I,s,f,p	High	IEMA Downstate Disaster workshop 2022	
AH22	Create/maintain an animal welfare disaster planning committee in order to properly follow requirements of IL PETs Act, and to have protocols in place for rescuing and sheltering pets and livestock during natural disasters. Provide training to staff/volunteers regarding animal rescue procedures and safety.	County Animal Control & Sheriff's Office, Local Animal Rescue Groups	Proposed	I,s,f,p	Low	Jenny Richardson, Project Paws of Southern Illinois (PPSI)	Private donations, animal control
AH23	Build a second water plant on a different lake. This would be a very large project with a long timeline.	Rend Lake Conservancy District (RLCD)	Proposed	I,s,f,p	Low	Keith Thomason RLCD	BRIC, DRA, Infrastructure Bill program



Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
AH24	Prepare essential facilities: equip with back-up generators, emergency survival and first aid supplies, etc. Create and update lists of emergency equipment and parts for utility services, emergency vehicles, other.	County EMA, First Responders, Municipalities	Proposed/Ongoing	I,s,f	High	Liz Allen (Village Clerk of North City)	EMPG, BRIC
AH25	Improve emergency response training, staff, resources, and equipment. Promote disaster resilience through workshops, education materials, and planning guides.	County EMA, First Responders, Municipalities	Ongoing	I,s,f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	
AH26	Develop/enhance warning systems to residents' cell phones	County EMA, municipalities	Proposed	I,s,f	Low	Aaron Eubanks (Village President of Buckner)	EMPG
AH27	Identify the most likely causes of a Mass Casualty Incident and make training exercises for those potential situations. Create a communication plan between coordinating agencies to be involved with mass casualty incidents.	Municipalities, First Responders, Franklin/Williamson County EMA; FEMA; IEMA	Ongoing	I,s,f,p	High	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	DOT safety grant, EMPG
AH28	Create emergency evacuation plans, build fallout shelters for communities	Municipalities, County EMA	Proposed	I,s,f	Low	Liz Allen (Village Clerk of North City)	BRIC, USDA
AH29	Review and update county & municipality building & zoning codes/ordinances to improve disaster resiliency, community safety, and energy efficiency	County Board, Municipalities	Proposed	L,s,f	Medium	2022 National Initiative to Advance Building Codes	
AH30	Solar panels at pump stations and main water plant to increase energy efficiency. Mobile backup generators for water plant and pump stations. Both measures will add redundancy to RLCD and ensure it maintains power in the case of an outage.	Rend Lake Conservancy District	Proposed	L,s,f,p	Medium	Larry Sanders & Keith Thomason, RLCD	DRA, USDA, IEPA, Infrastructure Bill, BRIC
AH31	Construct new EOC/ 911 center for Franklin County	Franklin County EMA, Sheriff's Office	Proposed	Local	Medium	Ryan Buckingham, FCEMA	BRIC

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grant
Tornado/Severe T-storms							
ST1	<b>Install lightning detection system:</b> RLCD will seek funding for and oversee the installation of lightning detection systems to better monitor severe weather.	RLCD	Proposed	l,s,p		from 2015 MHMP	
ST2	<b>Require the construction of safe rooms within new public buildings:</b> Rend Lake College will seek funding to enact a requirement for new buildings to have safe rooms.	Rend Lake College	Proposed	f		from 2015 MHMP	BRIC, USDA, Infrastructure Bill
ST3	<b>Construct new safe rooms:</b> The County EMA will oversee the implementation of this project. The Franklin-Williamson Bi-County Health Dept. (FWBCHD) will seek federal funding to install a tornado safe room in the FWBCHD building. Rend Lake College would like to use funding for the creation of shelters. Local resources will be used to evaluate the cost benefit of the shelters and define specific locations. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years. Rend Lake College and Benton CHSD #103 will each seek funding to construct new safe rooms in their buildings for the protection of their students.	Rend Lake College, Benton CHSD #103, Franklin County	Proposed	l,s,f		from 2015 MHMP	BRIC, USDA, Infrastructure Bill
ST4	Provide training to staff to isolate water supply lines to damaged buildings or water towers to stop leaks and reestablish water supply as quickly as possible. Provide training for employee safety and methods to locally operate drinking water transmission stations without communications for remote operations if radio towers are destroyed. RLCD has already prepared for this event and will implement lessons learned from the recent KY tornado.	RLCD	Ongoing	l	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	
ST5	In the event of a tornado; a review/ update on the FCHA Contingency plan; and maintain a yearly update so that in the case of an event it is accurate. Develop and assess teams per jurisdiction by Authority. Develop strategies to increase communication and efficiencies when managing loss or displacement of tenants due to natural disasters or other unexpected event.	Franklin County Housing Authority	Ongoing	f	Medium	Chris Ely; Executive Director FCHA	HMGP
ST6	Build a centrally located storm shelter, that is above ground. Create an action plan for where people will go during a tornado event. There is a tornado siren that will go off in the event of a tornado.	Franklin County EMA/ Buckner Fire Department	Proposed	l,s,f	Medium	Aaron Eubanks (Village President of Buckner)	BRIC, USDA, Infrastructure Bill

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
ST8	Install and/or improve sirens and early warning systems, retrofit critical facilities to withstand high winds. Multiple jurisdictions are in need of these upgrades.	All, County EMA	Proposed	l,s,f	Medium	Multiple jurisdictions	BRIC, USDA, Infrastructure Bill
ST9	Condemned or structurally unsafe building should be torn down and rubble should be removed and disposed of to prevent excessive flying debris during severe weather.	All, County EMA, IEMA	Ongoing	l,s,f	Medium	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	
ST10	Develop ordinance to require new development to place all new utility lines underground. Install lightning detection system.	All, County EMA, SPARC	ongoing	f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
Flooding/Dam Failure							
F1	Institute a buy-out plan for repetitive loss properties: RLCD and Franklin County will oversee the implementation of various projects.	RLCD, Franklin County	Proposed	I,s,f	Low	from 2015 Plan	FMA
F3	Rebuild pumping station at northeast quadrant of I-57 and IL-149 and reroute storm water north out of the City of West Frankfort. The City has had issues with this pumping station causing flooding in the City	City of West Frankfort, Brown and Roberts, Inc., Franklin County EMA	Proposed	I,f (BRIC grant in progress)	High	Tom Jordan, Mayor of West Frankfort	BRIC
F4	Replace culverts within city limits and have a truck for cleaning up flooding debris if needed.	Village of Logan/Hanaford Franklin County EMA	Ongoing	I,s,f	Low	Missie Melvin (Village President of Hanaford/Logan)	
F5	City waterways, creeks and drainage system maintenance program; Program to clean clear all drainage creeks outside city limits. System or plan to inspect, clean or clear debris from these drainage systems to improve water flow away from city limits.	City of West Frankfort, Franklin County EMA	Proposed	I,s,f	Medium	Jody Allen (Fire Chief for West Frankfort)	FMA, IEPA
F6	Regularly perform drainage system maintenance. Clearing city storm water drains, trenching larger ditches, etc.. Culvert replacement. Increase capacity of storm water capture.	Municipalities, Water Districts, Road commissions/jurisdictions, County EMA	Proposed	I,s,f	Medium	Multiple jurisdictions	FMA, IEPA
F7	Convert flood prone areas to wetlands	County EMA, Jurisdiction of area involved	Ongoing	I,s,f	Low	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	
F8	Implement alert systems to send notification of an identified potential or imminent threat. An Emergency Action Plan (EAP) can be developed/implemented to address how at-risk populations downstream will be notified in the event of a dam failure or potential failure. This may require working with adjacent counties who are also at risk. Develop/Mark Emergency Evacuation Routes.	Franklin County EMA, RLCD	Ongoing	s,f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
F9	Community outreach to inform land/homeowners of improvements that can reduce flooding impacts	All	Proposed	I,s,f	Medium	Franklin County EMA, Municipalities	EMPG,FMA
F10	Purchase emergency pumps and connection equipment to bypass flooded pumps stations. Mobile pumps can be used so that a small fleet of pumps could be used for the entire drinking water system.	RLCD	Proposed	I,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	FMA, USDA, IEPA, Infrastructure Bill
F11	In the event of a dam failure; Build a second water treatment plants on a separate lake. This would be a very large project with a long timeline.	RLCD	Proposed	I,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC, FMA
F12	Provide training for staff for drinking water bypass operations during flooding.	RLCD	Ongoing	I	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	
F13	Provide cross connects between the Rend Lake Conservancy District and other water providers so that water can be supplied in the event of failure of the drinking water treatment system. Cross connecting the RLCD system with other water providers would allow water supply until dam repairs could be completed.	RLCD	Proposed	I,s,f	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC, FMA
F14	Repair/replacement of collapsing storm drain along I-149 in Royalton	Village of Royalton, County EMA, IEMA	Proposed	L,s,f	High	Colton Braswell, Christy Powers – Village of Royalton	BRIC, FMA

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed By:	Potential Grants
Winter Storms							
WS1	<b>Purchase deicing chemicals:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 1-2 years.	Rend Lake College	Proposed	s	High	From 2015 MHMP	HMA
WS2	<b>Purchase snow fences:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	s	Low	From 2015 MHMP	HMA
WS3	Provide training and safety materials to staff for water main repairs in severe cold conditions.	RLCD	Ongoing	l	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	
WS4	Provide alternate raw lake water pumping capabilities for the drinking water treatment plant in case the lake and plant inlet freeze to the point that water cannot be withdrawn from the lake at the existing inlet location.	RLCD	Proposed	l,s,f	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC, USDA, IEPA

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Earthquakes							
EQ1	<b>Provide information to residents on structural and non-structural retrofitting:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	f	High	from 2015 MHMP	HMA, IEMA/FEMA preparedness grant
EQ2	<b>Develop earthquake emergency action plan:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	s	High	from 2015 MHMP	HMA, IEMA/FEMA preparedness grant
EQ4	Install automatic shutoff valves, construct new safe rooms in essential facilities and other locations	Franklin County EMA, agency/facility involved	ongoing	l,s,f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	BRIC, USDA
EQ5	Install at least two water supply lines from the Rend Lake water treatment plant to each community so that there is no single point of failure. A large earthquake will damage many underground water mains and may damage treatment plant structures and piping.	RLCD	Proposed	l,s,f	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC
EQ6	Provide cross connects between the Rend Lake Conservancy District and other water providers so that water can be supplied in the event of failure of the water treatment system.	RLCD	Proposed	l,s,f	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC
EQ7	In the case of an Earthquake, City hall will be the main center for operations in order to coordinate emergency action. Fire and Police Departments will directly respond.	City of Christopher, Fire&Police Depts	Ongoing	l	Low	Christopher City Mayor	
EQ8	Coordinate with local EMA/EMS services in earthquake occurs and to start search and rescue missions if needed.	Municipalities, Fire & EMS services, County EMA	Proposed	l,s,f	Medium	Missie Melvin (Village President of Hanaford/Logan)	Local/ mutual aid
EQ9	Review and update the FCHA Contingency Plan and Develop strategies to increase communication and efficiencies when managing loss or displacement of tenants due to natural disasters or another unexpected event.	Franklin County Housing Authorities	Ongoing	f	Low	Chris Ely; Executive Director FCHA	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
HazMat Release							
HAZ1	<b>Acquire protective gear:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	s	High	from 2015 MHMP	DOT safety grant, EMPG
HAZ2	<b>Develop hazmat emergency response:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	ongoing	s	Medium	from 2015 MHMP	DOT safety grant, EMPG
HAZ3	<b>Equip critical facilities with centralized positive-pressure HVAC systems:</b> RLCD will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	RLCD	Proposed	l,s,f	Low	from 2015 MHMP	BRIC
HAZ4	Test drinking water from the distribution system for chemical parameters if hazardous materials are released near distribution piping. Test the drinking water supply lake on a regular basis for chemical parameters.	RLCD	Ongoing	l	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	
HAZ5	Warning system for public when accidental release of chlorine from city sewer plant. Some type of audio or visual warning alarm for the public to evacuate area around sew plant.	Franklin County EMA/ City of West Frankfort Defense Department	Proposed	l,s,f	Medium	Mayor of Christopher	BRIC, IEPA, USDA
HAZ6	Obtain PPE for first responders and station near vulnerable areas. (Highways, chemical plants, etc.) Develop an action plan for HazMat releases	Franklin/Williamson County EMA; FEMA; IEMA	ongoing	l,s,f	Medium	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	DOT safety grant, EMPG



Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Drought/Extreme Heat							
H1	<b>Reduce urban heat island effect:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	p	Low	From 2015 MHMP	IEPA
H2	<b>Retrofit water supply systems:</b> RLCD will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	RLCD	Proposed	l,s,f	Low	From 2015 MHMP	BRIC, USDA, IEPA, Infrastructure Bill
H3	<b>Establish fire/landslide/erosion preventative vegetation management techniques:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	p	Low	From 2015 MHMP	EMPG
H4	Develop a water conservation plan and implementation procedures for Rend Lake operations and customers, a severe drought could lower the level in Rend Lake and could require water rationing.	RLCD	Proposed	l,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	IEPA
H5	Have ordinances to limit burning activities during drought	Multiple, see ordinance table	Ongoing/Proposed	l	Low	Aaron Eubanks (Village President of Buckner)	
H6	Inform and educate all residence of the county concerning extreme heat; Identify and promote public awareness of community shelters these facilities would provide temporary refuge for the county's vulnerable population during extreme heat events.	All	Ongoing	l,s	Low	County EMA	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Ground Failure							
GF1	<b>Maintain a list of buildings constructed over underground mines:</b> Greater Egypt can provide maps of mined areas for jurisdictions that request them	All	Proposed	s	High	Greater Egypt, Municipalities	Local funds
GF2	<b>Develop/improve mining regulations:</b> Rend Lake College will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation, if HMA funding is available, is forecasted to be initiated within approximately 3-5 years.	Rend Lake College	Proposed	s	High	From 2015 MHMP	DNR?
GF3	Install at least two water supply lines from the water treatment plant to each community that may be impacted by mine subsidence so that there is no single point of failure. Maintain a large regional warehouse of emergency repair parts for the drinking water transmission and distribution system.	RLCD	Proposed	l,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC, USDA, IEPA, Infrastructure Bill
GF4	Build a second water treatment plant on a different lake to supplement Rend Lake in the event of a severe drought. This would be a very large project with a long timeline.	RLCD	Proposed	l,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	BRIC
GF5	Educational events/brochures for residents about mine subsidence insurance	All	Proposed	l,s,f	Low	County EMA, Municipalities	Local funds/EMPG

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Pandemic/Disease Outbreak							
DEP1	<b>Enhance pandemic surveillance reporting systems (schools and sentinel computers, etc.):</b> County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.	Franklin County	Proposed	I,s,f	Medium	From 2015 MHMP	IDPH, CDC
DEP2	<b>Continue non-pharmaceutical intervention program:</b> County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.	Franklin County	ongoing	I,s,f	Medium	From 2015 MHMP	
DEP3	<b>Build a robust strategic stockpile:</b> County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.	Franklin County	Proposed	I,s,f	Medium	From 2015 MHMP	IDPH, CDC
DEP4	<b>Develop plan for local healthcare mass care situations:</b> FWBCHD is currently working with American Red Cross to enhance mass care capability through MRC volunteer shelter support. FWBCHD is also leading the region in developing a Mass Fatality Family Assistance Center plan and has secured equipment which should reduce surge to hospitals and coroner's offices and lessen the burden by other community response agencies. County Health Department and Hospitals will oversee implementation of this project. Will seek local and state for project.	Franklin County	Proposed	I,s,f	Medium	From 2015 MHMP	IDPH, CDC, Red Cross
DEP5	<b>Portable morgue and mutual aid agreement and response plan:</b> County Coroner has a portable morgue and access to trailer in the event of mass casualties. Mutual aid agreements with surrounding counties and internal departments. Coroner has a 7-year-old response plan but it has been updated twice.	Franklin County	Proposed	I	Medium	From 2015 MHMP	IDPH, CDC, Mutual Aid Agreements
DEP6	<b>Educate Community on Pandemics and How to Mitigation their Impacts:</b> Potential funding sources includes: Illinois Department of Public Health, U.S. Dept. of Health and Human Services, and various Private foundations	Franklin County	ongoing	s,f	Medium	From 2015 MHMP	
DEP7	<b>Purchase technical assistance and develop website to enhance medical countermeasure capability:</b> Potential funding sources includes: Illinois Department of Public Health, U.S. Dept. of Health and Human Services, and various Private foundations	Franklin County	Proposed	s,f,p	Medium	From 2015 MHMP	IDPH, CDC,
DEP8	Implement procedures and purchase a large supply of masks for personnel protection and continued operations of the Rend Lake Intercity Drinking Water Treatment Plant and Transmission System.	RLCD	ongoing	I	High	Keith Thomason (General Manager at Rend Lake Conservancy District)	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
DEP9	Develop alternative work stations, equipment/computer technology for alternative work stations, and alternative living arrangements for water treatment plant operators that must still work when exposed to a virus to keep drinking water flowing.	RLCD	Proposed	I,s,f	Medium	Keith Thomason (General Manager at Rend Lake Conservancy District)	
DEP10	Create plan to use village hall as an area to quarantine sick in case of severe outbreaks	Village of Buckner/ Franklin County EMA/ Buckner Fire Department	Proposed	I,s,f	Medium	Aaron Eubanks (Village President of Buckner)	HMGP
DEP11	Develop a vulnerable population list; Develop/update plans for mass care situations.	Village of North City/Franklin County EMA	Proposed	I	Medium	Liz Allen (Village Clerk of North City)	HMGP
DEP12	Update plans for mass vaccination and contact tracing. Update plan for contagious mass casualty outbreak. Continue non-pharmaceutical intervention programs to slow the spread of disease outbreak. Build a robust strategic stockpile of medical and non-medical supplies.	Bi County Health Dept./Franklin County EMA/SPARC	Ongoing	I,s,f	Low	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County) Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	IDPH, CDC
DEP13	State emergency services low man power plan for ambulance services; Come up with a plan to assist Ambulance services with trained personnel to assist or work during low manpower issues. Some type of MABAS EMS System. Where, how do we replace our people who are isolated and cannot work.	Franklin County EMA/ City of West Frankfort Defense Department	Ongoing	I,s,f	High	Jody Allen (Fire Chief for West Frankfort)	EMPG

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Terrorism							
TR1	Implement the items identified in the Rend Lake Risk and Resiliency Plan. Eliminate single points of failure in the water treatment and transmission system so that a single terrorist event will have less impact on the public. RLCD is working to identify areas that need duplicate components to avoid the single points of failure.	RLCD	Proposed	I,s,f	High	Keith Thomason (General Manager of the Rend Lake Conservancy District)	
TR2	Have an alert system in place; alert residents through a cell phone alert system. Create a stay-in-place plan for the residents in the event of a terrorist attack.	Franklin County EMA/ Buckner Fire Department/Village of Buckner	Proposed	I	Low	Aaron Eubanks (Village President of Buckner)	IEMA/FEMA preparedness grant
TR3	It is recommended that each agency and organization create a terrorist threat/attack plan specific for their situation. Police/Swat should drill for terrorist attacks at vulnerable locations. I.e. Schools/ hospitals.	Bi County Health Dept./Franklin & Williamson County EMA/IEMA	Ongoing	I,s,f	Low	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Cyberattack							
C1	Perform a study to identify cyber attack weakness at the drinking water treatment plant and pumping stations. Although RLCD keeps most of the systems off-line to minimize the potential and impact of a cyber attack, additional protection is needed for the Rend Lake water supply.	RLCD	Proposed	I,s,f	High	Keith Thomason (General Manager of the Rend Lake Conservancy District)	Infrastructure Bill
C2	Install low tech manual operation components for the drinking water treatment plant and pump stations to allow continued operation if the entire computerized system is disabled. All critical operational components need to be operable without automated computer control.	RLCD	Proposed	I,s,f	High	Keith Thomason (General Manager of the Rend Lake Conservancy District)	
C3	Ensure businesses and government agencies are aware of the Illinois attorney general's office data breach reporting system. Provide resources for the public on cyber security for home electronics.	All, Franklin/Williamson County EMA; FEMA; IEMA	Ongoing	I	Low	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	
C4	Monitor network traffic; Build an incident response plan.	Franklin County EMA/ North City Defense Department	Proposed	I	Low	Liz Allen (Village Clerk of North City)	

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Power outage/ utility disruption							
PO1	Refurbish or replace the 50-year-old emergency engines that are located at pump stations	RLCD	Proposed	l,s,f	High	Keith Thomason RLCD	BRIC
PO2	Install emergency diesel generator hookups/or installed generators at each pump station and lift station so that the stations can be operated if no engine exists at that location or if the emergency engines fail for any reason. No emergency engines or generators currently exist at any RLCD wastewater treatment lift station or treatment site. Water transmission sites that have engines also need switchgear hook-up panels in case the engines fail during operation or are down for repairs when an outage occurs.	RLCD	Proposed	l,s,f	High	Keith Thomason (General Manager of the Rend Lake Conservancy District)	BRIC, USDA, IEPA, Infrastructure Bill
PO3	In the event of a power outage or utility disruption; the civic center in town has a generator and will be able to serve the community in a mass outage event	City of Christopher	Ongoing	l	Medium	City of Christopher Mayor	
PO4	Report power outages, have a list of residents in need, that are without power. Make people that are dependent on power to stay alive a first priority. Provide a warming center if it's cold and a cooling center if it is hot outside. Generators will be needed to power village hall.	City of Buckner, Buckner Fire Dept, County EMA	Ongoing	l,s,f	Medium	Aaron Eubanks (Village President of Buckner)	
PO5	Updated notification maintenance program for backup generators. Maintenance notification program or updated system of all backup generators. To notify concerned parties that a system weekly run, checks are complete and system as no issues.	Franklin County EMA/ City of West Frankfort Defense Department	Proposed	l,s	High	Jody Allen (Fire Chief for West Frankfort)	
PO6	Keep a stock of necessary items for the community and station around the city. I.e. water, nonperishables, heaters. Create warming/cooling centers for the community in case of extreme temps.	Municipalities, Franklin/Williamson County EMA; FEMA; IEMA	Ongoing	l,s	Medium	Katrina Martin (Director of Emergency Preparedness in franklin and Williamson County)	
PO7	Building energy efficiency; Community preparedness outreach.	Franklin County EMA/ North City Defense Department	Proposed	l,s,f	Medium	Liz Allen (Village Clerk of North City)	IEPA, USDA
PO8	Equip critical facilities with back-up generators; Develop vulnerable population list that may be affected by a disruption or an outage. Franklin County can update the Empower site frequently and educate the public. This site provides de-identified data for persons with functional and access needs, which include individuals with electricity-dependent medical and assistive equipment. Distribute list of conservation measures to the public to conserve energy and water during hot/humid days.	Franklin County EMA	Proposed	f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	BRIC

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source	Priority	Strategy Proposed by:	Potential Grants
Wildfires/other							
OH1	Wildfire: Burn bans when conditions are too dry, and evacuate the area of a wildfire. Have a cellular warning system in place for residents, and a plan to evacuate.	Franklin County EMA/ Buckner Fire Department	Proposed	I,s,f	Low	Aaron Eubanks (Village President of Buckner)	
OH2	Wildfire and outreach program; Set up a program to inform Franklin County areas about things they could do to help prevent or help with wildfires. Like thinning out vegetation around buildings etc.	Franklin County EMA/ City of West Frankfort Defense Department	Proposed	I,s,f	Low	Jody Allen (Fire Chief for West Frankfort)	
OH3	Wildfire: Coordination between fire services between counties and IDNR should be fluid and practiced. Information should be shared with the public about how to protect their land and homes in the event of a wildfire.	Franklin/Williamson County EMA; FEMA; IEMA	Proposed	I,s	Low	Katrina Martin (Director of Emergency Preparedness in Franklin and Williamson County)	Mutual Aid Agreements, COADs
OH4	Wildfire: Modify or eliminate unnecessary brush and trees; Educate homeowners on how to avoid wildfire damage.	Franklin County EMA/ North City Defense Department	Proposed	I	Low	Liz Allen (Village Clerk of North City)	USDA CWDG
OH5	Establish fire/landslide/erosion preventative management techniques.	Franklin County EMA	Proposed	I,s,f	High	Tamara Caffey-Bey and Arienn Hermann (Regional Emergency Planning Coordinator SPARC)	
OH6	Wildfire: Write a Community Wildfire Protection Plan for Franklin County	County EMA, All Fire Depts	Proposed	L,f	High	Sesser Fire Dept, US Forest Service	USDA CWDG

## **6. Plan Implementation**

### **6.1. Implementation through Existing Programs**

Throughout the planning process, the Franklin County Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and create a comprehensive range of mitigation strategies specific to each jurisdiction. This work provides a blueprint for reducing the potential losses identified in the Risk Assessment (Section 4). The ultimate goal of this plan is to incorporate the mitigation strategies proposed into ongoing planning efforts within the County. The Franklin County Emergency Management Agency will be the local champion for the mitigation actions. The Franklin County Board and the city and village councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

Greater Egypt will use the MHMPs from all 5 counties in the region as guidance in other planning initiatives including the Comprehensive Economic Development Strategy (CEDs), Transportation Planning, and Environmental Planning. It is recommended that the County and municipalities also incorporate this document into their local planning efforts.

Continued public involvement is also critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the Franklin County Emergency Management Agency and forwarded to the Planning Team for discussion. Education efforts for hazard mitigation will be an ongoing effort of Franklin County. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of the MHMP will be maintained in each jurisdiction and in the Franklin County Emergency Management Agency.

### **6.2. Monitoring, Evaluation, and Updating the MHMP**

Throughout the five-year planning cycle, the Franklin County Emergency Management Agency will reconvene the Planning Team to monitor, evaluate, and update the plan on an annual basis. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If there is a need for a special meeting, due to new developments or the occurrence of a declared disaster in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

As part of the update process, the Planning Team will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The team will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The plan revision will also reflect changes in local development and its relation to each hazard. The parties responsible for the various implementation actions



will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the Franklin County Board.

## Appendix 1 Planning Team List

Name of Municipality/Organization	Participation Type	Name(Last,First)	Title
County EMA			
		Buckingham, Ryan	Director
		Saeger, Luke	Bureau Chief of Operations
		Warren, Matthew	Bureau Chief
		Little, Gary	Deputy Director
		Hopkins, Lynsey	Chief of Staff
County			
		Ely, Chris	Executive Director- County Housing Authority
		Fitzjerrels, Darla	Director of Court Services
		Fowler, Dale	State Senator 59th dist
		Leffler, Marty	Coroner
		Vercellino, Steve	Franklin County Treasurer
		Sink-Prather, Gayla	Administrative Assistant- county board
Cities and Villages			
Benton	Jurisdiction	Craig, Brook	City Clerk
		Meno, Lisa	Treasurer
		Kondritz, Fred	Mayor
		Cockrum, Shane	Fire Chief
Buckner	Jurisdiction	Eubanks, Aaron	mayor
Christopher	Jurisdiction	Arondelli, Shari	water dept
		Bartolotti, Gary	Mayor
		Southard, Jane	
Dowell	Jurisdiction	Groves, Mindy	Village Clerk
Ewing*	NA		
Freeman Spur	Jurisdiction	Baldi, Shawn	Village President
		Baldi, Carol	Village Clerk
Hanaford/Logan	Jurisdiction	Melvin, Missie	Village President
Macedonia*	NA		
North City/Coello	Jurisdiction	Allen, Liz	Village Clerk
Royalton	Jurisdiction	Young, Lisa	Village Clerk
		William Reinbold	Fire Cheif
		Captain Diuguid	Police Chief
Orient*	NA		
Sesser	Jurisdiction	Kopec, Jerome	Water and Sewer Superintendent
		Ashmore, Jason	Mayor
Thompsonville	Jurisdiction	Harries, James	Mayor
		Hargett, Randy	Water clerk/village hall office
		Cardwell, Trevor	fire chief
		Kallahr, Steve	police chief
West Frankfort	Jurisdiction	Allen, Jody	Fire Chief
		Sailiez, Derek	Acting Chief
West City	Jurisdiction	Jon Graskewicz	Chief of Police
Valier	Jurisdiction	McMurry, Bruce	Mayor
Zeigler	Jurisdiction	Perry, Pam	city clerk
		Dennis Mitchell	Mayor
		Childers, Jeremy	Asst. Police Chief

\*While these villages are still considered municipalities per the 2020 decennial census, Greater Egypt and Franklin County did not receive any reply to our requests that they participate in the planning process.

School Districts			
Benton High School District 103	Jurisdiction	Johnson, Benjamin	Superintendent
Akin Schools	Jurisdiction	McCollum, Tammy	Superintendent
Franklin-Williamson Regional Office of Education	Jurisdiction	Donkin, Matt	Regional Superintendent of Schools
Health/ and Emergency Services			
Franklin-Williamson Bi-County Health	Jurisdiction	Martin, Katrina	Director of Emergency Preparedness
		Alexander, Shelley	Director of Emergency Preparedness
		Kaytor, Kevin	
Franklin Hospital	Stakeholder	Bymaster, Tina	Emergency Preparedness Co-chair
		Courter, Judith	Emergency Preparedness Cochair
Regional Hospital Coordinating Center	Stakeholder	Herrmann, Arien	Region V manager
		Caffrey-Bey, Tamara	Regional Emergency Planning Coordinator
		Hagan, Marty	Resource Specialist, Region V
American Medical Response, Inc.	Stakeholder	Owens, John	
		Morse, Heather	
Franklin County 911	Jurisdiction	Abbott, Amos	
		Lamont, Cathy	
Other			
Rend Lake Conservancy District	Jurisdiction	Sanders, Larry	General Counsel
		Thomason, Keith	General Manager
U.S. Army Corps of Engineers: Rend Lake	Jurisdiction	Hancock, Jodi	Natural Resources Specialist
W9RY IL SM	Stakeholder	Beebe, Thomas	
K9BJA Amateur Radio	Stakeholder	Adelsberger, Buddy	
Jackson County EMA	Neighboring Jurisdiction	Burns, Robert	Sherriff, EMA Coordinator
		Rowe, Orval	Deputy EMA Coordinator
Jefferson County EMA	Neighboring Jurisdiction	Lueker, Steve	Coordinator
		Hertenstein, Keith	Assistant Coordinator
Williamson County EMA	Neighboring Jurisdiction	Burgess, Brian	Director
		Creek, Pat	Deputy Director
Perry County EMA	Neighboring Jurisdiction	Genesio, Charles	Director

## Appendix 2 Essential Facilities

Following is the list of essential facilities as determined by the Franklin County Planning Team. In the event that building area and replacement values could not be provided, the CDMS/Hazus software provides default values based on census tract and square feet, or by essential facility type. Detailed spreadsheets and GIS shapefiles for essential facilities can also be requested at [greateregypt.org/gis-services](http://greateregypt.org/gis-services)

### Emergency Operations Center (EOC)

Name	Address	City	Zip	yr built	Backup Power?	Sq Ft	Replacement Value
Franklin County Emergency Operations Center	901 Public Square	Benton	62812	1961		11000	\$2,796,530.00

### Ambulance Stations

Name	Address	City	Zip	Yr Built	Backup Power	Kitchen	Shelter Capacity	Equipment	Sq Ft	Replacement Value
American Medical Response	137 Industrial Park Rd	Benton	62812						5152	\$1,309,793

### Rend Lake Conservancy District

Name	Address	City	Zip	Yr Built	Backup Power	Equipment	Sq Ft	Replacement Value
Rend Lake Intercity Water System	11228 Marcum Branch Road	Benton	62812		Yes	Multiple Pick-up trucks and heavy equipment	30000	\$45,000,000
Rend Lake Conservancy Administrative Office	11231 Marcum Branch Road	Benton	62812					

## Fire Stations

Name	Address	City	Zip Code	Yr Built	Trucks & rescue equip.	Kitchen?	Backup power?	Sq Ft	Replacement Value
Benton Fire Department	107 N. Maple Street	Benton	62812	1977				11000	\$2,796,530.00
Buckner Volunteer Fire Department	207 Main St	Buckner	62819	2000				11000	\$2,796,530.00
Cave Eastern Fire Protection District	3596 Main St	Thompsonville	62890	1974				11,000	\$2,796,530.00
Christopher Fire Department	211 N Thomas St	Christopher	62822	1951				11000	\$2,796,530.00
Coello Volunteer Fire Department	9095 Main St	Coello	62825	2014				3600	\$160,000
Ewing Northern Fire Protection Station 1	115 W Main ST	Ewing	62836	1965				11000	\$2,796,530.00
Ewing Northern Fire Protection Station 2	21455 Ewing Rd	Macedonia	62860	1974				11000	\$2,796,530.00
Ewing Northern Fire Protection Station 3	8950 Steel City Rd	Benton	62812	1974					
Royalton Volunteer Fire Department	403 S Main St	Royalton	62893	1957				11000	\$2,796,530.00
Sesser Fire Protection District	910 S Park St	Sesser	62884	1979				11000	\$2,796,530.00
Valier Fire Department	217 W Main St	Valier	62891	1970				11000	\$2,796,530.00
West City Fire Department	1000 Blakely St	Benton	62812	1961				11000	\$2,796,530.00
West Frankfort Fire Department	201 E. Nolen	West Frankfort	62896	1970				11000	\$2,796,530.00
Zeigler Fire Department	301 Church St	Zeigler	62999	1990				11000	\$2,796,530.00

## Police Stations

Name	Address	City	Zip Code	Yr Built	Backup power	Sq Ft	Replacement value
Benton Police Department	503 W Washington Street	Benton	62812	1961		11000	\$2,796,530.03
Buckner Police Department	207 West Main Street	Buckner	62819	1965		11000	\$2,796,530.03
Christopher Police Department	208 N Thomas	Christopher	62822	1951		11000	\$2,796,530.03
Franklin County Sheriff's Office	403 E. Main Street	Benton	62812	1961		11000	\$2,796,530.03
IDNR Region V Office	11731 State Highway 37	Benton	62812	1976		11000	\$2,796,530.03
Orient Police Department	404 S Lincoln St	Orient	62874	1971		11000	\$2,796,530.03
Royalton Police Department	311 S Main St	Royalton	62983	1957		11000	\$2,796,530.03
Sesser Police Department	302 W Franklin St	Sesser	62884	1960		11000	\$2,796,530.03
Thompsonville Police Department	21230 Division St	Thompsonville	62890	1974		11000	\$2,796,530.03
Valier Police Department	400 Main St	Valier	62891	1965		11000	\$2,796,530.03
West City Police Department	201 S Browning St	Benton	62812	1961		11000	\$2,796,530.03
West Frankfort Police Department	201 East Nolen Street	West Frankfort	62896	1970		11000	\$2,796,530.03
Zeigler Police Department	303 Church St	Zeigler	62999	1957		11000	\$2,796,530.03

## Hospitals

Name	Address	City	Zip	Yr Built	# beds	Backup Power	Kitchen	Shelter Capacity	Replacement Value
Franklin Hospital	201 Bailey Ln	Benton	62812	1976	16				3,401,437.50

## Schools

County	District/ Type	Name	Address	City	Zip Code	Yr Built	shelter capacity	Kitchen	Sq Ft	Replacement Value
Franklin	Akin School District 91	Akin Grade School	21962 Akin Blacktop	Akin	62890	1974			7,143	\$1,440,214
Franklin	Benton Consolidated High School District 103	Benton Consolidated High School	511 East Main Street	Benton	62812	1961			43,714	\$8,814,112
Franklin	Benton District 47	Benton Middle School	1000 Forest St	Benton	62812	1965			35,857	\$7,229,876
Franklin	Benton District 47	Benton Grade School	1000 E McKenzie S	Benton	62812	1965				same building
Franklin	Christopher Unit School District #99	Christopher Elementary School	501 S Snider St	Christopher	62822	1951			43,143	\$8,698,894
Franklin	Christopher Unit School District #99	Christopher High School	1 Bearcat Dr	Christopher	62822	1951			16928.57	\$3,413,308
Franklin	Ewing-Northern CSSD #115	Ewing Grade School	51 N Main St	Ewing	62836	1974			15571.43	\$3,139,667
Franklin	Frankfort CUSD #168	Central Junior High School	1600 E. Ninth St	West Frankfort	62896	1962			20,071	\$4,047,002
Franklin	Frankfort CUSD #168	Denning Elementary School	1401 W. Sixth St	West Frankfort	62896	1947			38,000	\$7,661,940
Franklin	Frankfort CUSD #168	Frankfort Community High School	601 E. Main St	West Frankfort	62896	1955			41,857	\$8,439,656
Franklin	Frankfort CUSD #168	Frankfort Intermediate School	800 N. Cherry St	West Frankfort	62896	1962			38,214	\$7,705,146
Franklin	Private	Ewing Mennonite School	15606 Log Cabin Rd	Ewing	62836	1974			4714.286	\$950,541
Franklin	Private	St John The Baptist Catholic School	702 E. Poplar Street	West Frankfort	62896	1955			5000	\$1,008,150
Franklin	ROE 21	Echo Juvenile Detention Center	409 E Washington St	Benton	62812	1965			1,286	\$259,239

Schools continued

County	District/ Type	Name	Address	City	Zip Code	Yr Built	shelter capacity	Kitchen	Sq Ft	Replacement Value
Williamson	ROE21	Project Echo Alternative School	17428 IL-37	Johnston City	62951	1976			928.5714	\$187,228
Franklin	Sesser-Valier CUSD #196	Sesser-Valier Elementary/Junior High	4626 State Highway 154	Sesser	62884	1960			25142.86	\$5,069,555
Franklin	Sesser-Valier CUSD #196	Sesser-Valier High School	4626 State Highway 154	Sesser	62884	1960			16428.57	\$3,312,493
Franklin	Thompsonville CUSD #174	Thompsonville Grade School	21191 Shawneetown Rd	Thompsonville	62890	1974			18571.43	\$3,744,557
Franklin	Thompsonville CUSD #174	Thompsonville High School	21191 Shawneetown Rd	Thompsonville	62890	1974			7642.857	\$1,541,029
Franklin	Zeigler-Royalton CUSD #188	Zeigler-Royalton K-8 School	4877 IL-148	Mulkeytown	62865	1957			22857.14	\$4,608,686
Franklin	Zeigler-Royalton CUSD #189	Zeigler-Royalton High School	4989 IL-148	Mulkeytown	62865	1957			12857.14	\$2,592,386



## Appendix 3 Risk Indices

### Risk Indices for Franklin County

hazard	avg risk index	#Lists included	total # lists	% Importance	weighted risk index
Tornado	14.08	13	14	0.929	13.07
Earthquake	12.77	13	14	0.929	11.86
Epidemic	19.33	6	14	0.429	8.29
HazMat	9.38	8	14	0.571	5.36
Winter storm	5.08	13	14	0.929	4.71
Ground Failure	5.73	11	14	0.786	4.50
Thunderstorm	6.11	9	14	0.643	3.93
Flooding	4.90	10	14	0.714	3.50
Dam failure	5.00	9	14	0.643	3.21
Extreme heat	5.00	8	14	0.571	2.86
Terrorism	4.60	5	14	0.357	1.64
Wildfire	5.33	3	14	0.214	1.14
Cyberattack	12.00	1	14	0.071	0.86
Meteor	4.50	2	14	0.143	0.64
Utility disruption	6.00	1	14	0.071	0.43
Power outage	2.00	2	14	0.143	0.29
Infestation	4.00	1	14	0.071	0.29
Landslide	1.50	2	14	0.143	0.21
Invasive species	3.00	1	14	0.071	0.21

### Risk Indices by jurisdiction

Cities/villages not listed did not return a hazard ranking exercise. County Authorities were included in the averages above.

Benton	
Hazard	Risk Index
earthquake	16
hazmat	8
tornado	6
flooding	6
terrorism	6
extreme heat	4
winter storm	4
ground failure	2
dam failure	2

Buckner	
Hazard	Risk Index
tornado	9
dam failure	8
epidemic	4
flooding	4
winter storm	4
thunderstorm	4
ground failure	2

Christopher	
Hazard	Risk Index
winter storm	8
earthquake	4
tornado	4
thunderstorm	4
flooding	3

Coello/North City	
Hazard	Risk Index
epidemic	32
earthquake	24
tornado	12
extreme heat	8
terrorism	8
meteor	8
ground failure	4
winter storm	4
thunderstorm	4
wildfire	4
invasive species	3
hazmat	2
flooding	1
dam failure	1
landslide	1

Freeman Spur	
Hazard	Risk Index
tornado	32
epidemic	32
ground failure	24
hazmat	24
earthquake	16
winter storm	16
thunderstorm	8
wildfire	8
flooding	6
extreme heat	4
terrorism	4
meteor	1

Hanaford/Logan	
Hazard	Risk Index
tornado	16
earthquake	12
thunderstorm	8
flooding	4
winter storm	4

Royalton	
Hazard	Risk Index
epidemic	32
tornado	16
thunderstorm	16
earthquake	12
ground failure	12
extreme heat	6
winter storm	4
flooding	3

Rend Lake Conservancy District	
Hazard	Risk Index
Dam Failure	8
earthquake	4
ground failure	2
winter storm	2
hazmat	1
terrorism	1

Sesser	
Hazard	Risk Index
earthquake	24
tornado	24
dam failure	8
hazmat	8

West City	
Hazard	Risk Index
Dam failure	8
earthquake	4
tornado	4
winter storm	4
extreme heat	3
ground failure	1

West Frankfort	
Hazard	Risk Index
Earthquake	24
tornado	24
flooding	12
hazmat	12
ground failure	8
thunderstorm	4
epidemic	4
winter storm	3
extreme heat	3

Below is the example worksheet of the Franklin County Risk Assessment and responses from Planning Team members



## Franklin County Multi-Hazard Mitigation Plan

### ***Hazard Identification***

Let's start by thinking about any and all-natural hazards that have affected your community in the past. Do any historical natural hazard events come to mind? If so, start your list of possible natural hazards with experiences that you have been through or have heard of within your community. What happened previously is a great guide in planning and preparing for what may happen again. Even for events that took place 100 or more years ago, there is still the possibility that it could happen again.

Though this list may start with your own personal experiences or based off of stories you've heard, this should not be the only way you come up with a list of natural hazards. There are other natural hazards that may be possible in the future, that may not have happened yet. The nature of some threats may change overtime, whether that is due to weather pattern changes, or just the rarity of that threat happening. It's always good to be prepared for anything and everything, and remember:

*It's not **IF** it happens, it's **WHEN** it happens.*

Below are two different lists of hazards. The first list is of hazards that have historic data in the state of Illinois. The second list of hazards are less probable to happen in Illinois, but are still possible.

Check the box next to each hazard you feel your community should be prepared for.

#### List of Possible Hazards:

- |  |   |
|--|---|
| <input type="checkbox"/> Dam Failure                                     | <input type="checkbox"/> Landslide              |
| <input type="checkbox"/> Earthquake                                      | <input type="checkbox"/> Levee Failure          |
| <input type="checkbox"/> Epidemic  | <input type="checkbox"/> Meteor Impact          |
| <input type="checkbox"/> Extreme Heat                                    | <input type="checkbox"/> Terrorism              |
| <input type="checkbox"/> Flooding  | <input type="checkbox"/> Thunderstorm           |
| <input type="checkbox"/> Ground Failure (mine subsidence/Karst/sinkhole) | <input type="checkbox"/> Tornado                |
| <input type="checkbox"/> Hazardous Materials Event                       | <input type="checkbox"/> Volcanic Eruption      |
| <input type="checkbox"/> Infestation                                     | <input type="checkbox"/> Wildfire               |
| <input type="checkbox"/> Invasive Species                                | <input type="checkbox"/> Winter storm/Ice storm |

Are there any other hazards that your community would like to add to their list?



## Franklin County Multi-Hazard Mitigation Plan

### Risk Assessment

Now, to rank the hazards from the list that you have created, we first need to understand the Risk Index equation.

$$\text{RISK INDEX} = \text{PROBABILITY} * \text{SEVERITY}$$

The **PROBABILITY** of an event is how likely the event will occur.

The **SEVERITY** of the event is the degree to which a hazard affects the functionality of society and the natural environment.

Use the table below to give each hazard a probability and severity ranking. Then, use the above equation to complete the hazard risk assessment by giving each hazard a risk index. Use the risk index of each hazard to then rank each hazard by most threatening/important to least threatening/importantance.

Probability	Characteristics
4 – Highly Likely	Event is probable within the next calendar year. These events have occurred, on average, once every 1-2 years in the past.
3 – Likely	Event is probable within the next 10 years. Event has a 10-15% chance of occurring in any given year. These events have occurred, on average, once every 3-10 years in the past.
2 – Possible	Event is probable within the next 50 years. Event has a 2-10% chance of occurring in any given year. These events have occurred, on average, once every 10-50 years in the past.
1 – Unlikely	Event is probable within the next 200 years. Event has a 0.5-2% chance of occurring in any given year. These events have occurred, on average, once every 50-200 years in the past.

Severity	Characteristics
8 – Catastrophic	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 – Critical	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 – Limited	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 – Negligible	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.





# Franklin County Multi-Hazard Mitigation Plan

## Risk Assessment

RHCC, Arien Herrmann

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Dam Failure/ Levee Failure	1	4	4	4
Earthquake	1	8	8	2
Epidemic	3	4	12	1
Extreme Heat	4	2	8	2
Flooding	3	2	6	3
Ground Failure	2	2	4	4
Hazmat Event	3	4	12	1
Infestation	2	2	4	4
Landslide	2	1	2	6
Space Weather	2	2	4	4
Terrorism	1	4	4	4
Thunderstorm	3	1	3	5
Tornado	2	4	8	2
Wildfire	1	4	4	4
Winter Storms	2	1	2	6
Draught	2	1	2	6
Cyber Attack	3	4	12	1
Utility Disruption	3	2	6	3
Chemical, Biological, Radiological, Nuclear	2	2	4	4
Civil Disruption	2	4	8	2
Transportation Incident	4	1	4	4

City of Benton, Shane Cockrum

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Dam Failure	1	2	2	7
Earthquake	2	8	16	1
Extreme Heat	4	1	4	6
Flooding	3	2	6	3
Ground Failure	2	1	2	7
Haz-Mat Event	4	2	8	2
Terrorism	3	2	6	3
Tornado	3	2	6	3
Winter Storm	4	1	4	6

Village of Buckner, Aaron Eubanks

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Dam Failure	1	8	Click.	Click.
Epidemic	2	2	Click.	Click.
Flooding	4	1	Click.	Click.
Ground Failure (mine subsidence/karst/sinkhole)	2	2	Click.	Click.
Thunderstorm	4	1	Click.	Click.
Tornado	3	3	Click.	Click.
Winter storm/Ice storm	4	1	Click.	Click.

Franklin County Housing Authority, Chris Ely

Hazard	Probability (1-4)	Severity (1,2,4, or 8)	Risk Index (P*I)	Rank
Tornado	2	2	4	1
Winter Weather	3	1	3	2
Earthquake	1	2	2	3
Ground Failure	2	1	2	3

City of Christopher, Gary Bartolotti

Jurisdiction Hazard Risk Assessment

Hazard	Probability (1-4)	Severity (1,2,4, or 8)	Risk Index (P*I)	Rank
Earthquake	2	4	8	4
Extreme Heat	3	2	6	3
Flooding	3	2	6	2
Thunder Storm	4	2	8	1
DAM FAILURE	2	1	2	5
Electrical Power Failure	2	4	8	6

Village of Freeman Spur, Shawn Baldi

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Earthquake	2	8	16	8
Epidemic	4	8	32	1
Extreme Heat	4	1	4	5
Flooding	3	2	6	6
Ground Failure (mine subsidence...)	3	8	24	7
Hazardous Material Event	3	8	24	10
Meteor Impact	1	1	1	12
Terrorism	2	2	4	11
Thunderstorm	4	2	8	2
Tornado	4	8	32	3
Wildfire	4	2	8	9
Winter Storm/Ice Storm	4	4	16	4

Village of Hanaford (Logan), Missie Melvin

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Thunderstorms	4	2	2	2
Earthquake	3	4	2	1.
Ground Failure	1	4	2	5
Tornado	4	4	2	3
Winter Storm	4	1	2	4

Village of West City, Joseph Moyers

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Dam Failure	1	8	8	
Earthquake	2	2	4	
Extreme Heat	3	1	3	
Ground Failure	1	1	1	
Tornado	2	2	4	
Winter Storm	2	2	4	

Rend Lake Conservancy District, Larry Sanders

<b>Hazard</b>	<b>Probability (1-4)</b>	<b>Severity (1,2,4, or 8)</b>	<b>Risk Index (P*I)</b>	<b>Rank</b>
Rend Lake Dam Failure	1	8	8	1
Earthquake	1	4	4	2
Mine Subsidence	2	1	2	3
Hazardous Materials	1	1	1	5
Terrorism	1	1	1	5
Winter Storm	2	1	2	3

## Appendix 4 Meeting Minutes and Attendance



### Franklin County Multi-Hazard Mitigation Plan Meeting 1 Minutes

June 10, 2021 - 10:00 AM  
County EMA Director: Ryan Buckingham  
Zoom (virtual) Meeting  
Planning Team Attendance: 25

Tyler Carpenter (Greater Egypt) opened the meeting and introduced Ryan Buckingham, EMA Director of Franklin County, and Cary Minnis, Executive Director with Greater Egypt. They both gave opening remarks regarding the history of the Multi-hazard Mitigation Planning (MHMP) process and the importance of the planning team.

Tyler Carpenter reviewed the MHMP process which includes: hazard mitigation history and assistance, local MHMP process, and adoption of the plan. He explained the planning process involves forming a planning team to assist in identifying hazards, developing mitigation strategies, and match requirements. An emphasis was placed on participation in the plan and funding for jurisdictions.

Kelsey Bowe (Greater Egypt) presented historical hazards in Franklin County. She also identified hazards that have been included in previous plans for Franklin County. Kelsey introduced the critical facilities data. This dataset will need to be updated for the HAZUS models to be more accurate. The Planning Team will need to review the critical facilities map.

Ciara Nixon (Greater Egypt) explained the process to assess risk from hazards. The Planning Team will be required to complete the Hazard Ranking exercise for their jurisdiction. This utilizes the Risk Priority Index Equation. Technical difficulties kept the Planning Team from participating in the exercise during the end of the meeting, but the exercise will be sent out to partners. Greater Egypt will provide assistance for the exercise. Meeting materials will be available at: <http://greateregypt.org/hazard-mitigation-planning/>.

The meeting was adjourned.

<b>Meeting Attendance</b>
<b>Meeting 1: June 10, 2021 10:00 AM</b>
<b><i>Name</i></b>
Ryan Buckingham
Marty Leffler
Katrina Martin
Judith Courter
Darla Fitzjerrells
Jody Allen
Gayla Sink Prather
Jodie Hancock
Dale Fowler
Chris Ely
Steve Vercellino
Luke Saeger
Matthew Warren
Kelly Norris
Brad Graul
Deb Newman
Jerome Kopec
Keith Thomason
Katrina Martin
Loretta Ellis
Michael Rasnic
Orval Rowe
Tyler Carpenter
Kelsey Bowe
Ciara Nixon
Cary Minnis





## Franklin County Multi-Hazard Mitigation Plan

### Meeting 2 Minutes

Sept 23, 2021 - 10:00 AM

County EMA Director: Ryan Buckingham

Zoom (virtual) Meeting

Planning Team Attendance: 19

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Tyler Carpenter (Greater Egypt) opened the meeting and gave introductory remarks. Meeting attendees were encouraged to introduce themselves through the chat feature.

Mr. Carpenter reviewed the Planning Updates and the timeline of the MHMP. He explained the planning process involves collaboration within the jurisdictions in order to assist in identifying hazards, developing mitigation strategies, and match requirements. An emphasis was placed on participation in the plan and the match funding for officials in the jurisdictions. He also discussed what to expect leading up to the next MHMP meeting (match survey and strategies exercises).

Kelsey Bowe (Greater Egypt) presented requirements for Franklin County MHMP plans. She also identified hazards that have been included in previous plans for Franklin County. Different hazards and their damages were discussed for Franklin County. Ms. Bowe introduced the initial hazard models and the areas of impact within the Benton and West City area. She also discussed the different cost of damages within a range of a modeled earthquake's 'epicenter' in Benton and the overall severity of earthquakes causing injury or death within surrounding areas. Possible mitigation strategies were discussed for the county. The Hazus model was discussed as a means to understand the development of the data for hazards.

Ms. Bowe explained the process to assess risk of hazards through the hazard ranking exercises and the mitigation strategies exercises. The Planning Team will be required to complete the Mitigations Strategies exercise for their jurisdiction. This document has been requested per jurisdiction, in order to meet the responsibilities of the planning team. Greater Egypt will provide assistance for the exercise. Meeting materials will be available at: <http://greateregypt.org/hazard-mitigation-planning/>.

The meeting was adjourned.

Meeting Attendance
Meeting 2: September 23, 2021 10:00 AM
<i>Name</i>
Amos Abbott
Bruce McMurray
Darla Fitzjerrells
Derek Burwell
Ryan Buckingham
FCHA
Jared Duiguid
Jodie Hancock
Katrina Martin
Pat Creek
Dale Fowler
Shane
Tamara Caffey-Bey
Arien Hermann
Kelly Norris
Kelsey Bowe
Gabrielle Reed
Tyler Carpenter
Elice Hall



## Franklin County Multi-Hazard Mitigation Plan

### Meeting 3 Minutes

**March 22, 2022- 10:00 AM**

County EMA Director: Ryan Buckingham

Zoom (virtual) Meeting

Planning Team Attendance: 6

Kelsey Bowe (Greater Egypt) opened the meeting and gave introductory remarks. Meeting attendees were encouraged to introduce themselves through the chat feature.

Ms. Bowe reviewed the planning updates and the timeline of the MHMP. She explained the importance of collaboration within the jurisdictions; in order to identify hazards, and in developing mitigation strategies. An emphasis was placed the match requirements for funding that comes from participation in each jurisdiction in the county. She also discussed what to expect leading up to the next MHMP meeting, which includes completing match surveys and reviewing the mitigation plans document for the county to meet match requirements.

Ms. Bowe reviewed the hazard ranking for Franklin County; based on the responses of the planning partners. She also discussed the updates for any essential facility within the county; giving planning partners a moment to review and make changes. She presented the mitigation strategies that each jurisdiction has completed. The importance and appreciation of submitting adequate mitigation strategies, and essential facilities data was expressed further by Ms. Bowe.

Ms. Bowe explained what to expect in the future for Franklin County MHMP plans, and offered an opportunity to reach out to her about any last-minute changes being made for the strategies. The goals of hazard mitigation strategies were reviewed. The team was given time during the meeting to make any comments or changes based on the essential facilities list information, and the mitigation strategies information.

Ryan Buckingham made closing remarks on the appreciation of planning partners

This document has been requested per jurisdiction, in order to meet the responsibilities of the planning team. Greater Egypt will provide assistance for the exercise. Meeting materials will be available at: <http://greateregypt.org/hazard-mitigation-planning/>.

The meeting was adjourned.

Meeting Attendance
Meeting 3: March 22, 2022 10:00AM
<i><b>Name</b></i>
Kelsey Bowe
Gabrielle Reed
Ryan Buckingham
Jerome Kopac
Tamara Caffey-Bey
Jason Ashmore



## Franklin County Multi-Hazard Mitigation Plan

### Meeting 3.5 Minutes

August 9th, 2022- 10:00 AM

County EMA Director: Ryan Buckingham

Zoom (virtual) Meeting

Planning Team Attendance: 27

Due to poor attendance at meeting 3, meeting 3.5 was held using the same presentation materials. Kelsey Bowe (Greater Egypt) opened the meeting and gave introductory remarks. Meeting attendees were encouraged to introduce themselves through the chat feature.

Ms. Bowe reviewed the planning updates and the timeline of the MHMP. She explained the importance of collaboration within the jurisdictions; in order to identify hazards, and in developing mitigation strategies. An emphasis was placed the match requirements for funding that comes from participation in each jurisdiction in the county. She also discussed what to expect leading up to the next MHMP meeting, which includes completing match surveys and reviewing the mitigation plans document for the county to meet match requirements.

Ms. Bowe reviewed the hazard ranking for Franklin County; based on the responses of the planning partners. She also discussed the updates for any essential facility within the county; giving planning partners a moment to review and make changes. She presented the mitigation strategies that each jurisdiction has completed. The importance and appreciation of submitting adequate mitigation strategies, and essential facilities data was expressed further by Ms. Bowe.

Ms. Bowe explained what to expect in the future for Franklin County MHMP plans, and offered an opportunity to reach out to her about any last-minute changes being made for the strategies. The goals of hazard mitigation strategies were reviewed. The team was given time during the meeting to make any comments or changes based on the essential facilities list information, and the mitigation strategies information.

Ryan Buckingham made closing remarks on the appreciation of planning partners

This document has been requested per jurisdiction, in order to meet the responsibilities of the planning team. Greater Egypt will provide assistance for the exercise. Meeting materials will be available at: <http://greateregypt.org/hazard-mitigation-planning/>.

The meeting was adjourned.

Meeting Attendance
Meeting 3.5: August 9, 2022 10:00 AM
<i><b>Name</b></i>
Judith Courter
Jeremy Childers
Tami Price
Tamara Caffey-Bey
Buddy Adelsberger
Cindy Miklos
Darla Fitzjerrells
Shelly Alexander
Larry Miller
Gayla Prather
Ryan Buckingham
Lyndsey Hopkins
Larry Sanders
Amos Abbott
Mike Rasnic
Kelsey Bowe
Tyler Carpenter
Daniel Lewis
Chris Ely- FCHA
Keith Thomason
Kirk Packer
Matt Donkin
Jerome Kopec
Steve Warner
Thomas Beebe
Tina Bymaster
Steve Vercinello



## Franklin County Multi-Hazard Mitigation Plan

### Meeting 4 Minutes

December 8, 2022- 10:00 AM

County EMA Director: Ryan Buckingham

Zoom (virtual) Meeting

Planning Team Attendance: 27

Kelsey Bowe (Greater Egypt) opened the meeting and gave introductory remarks. Meeting attendees were encouraged to introduce themselves through the chat feature.

Ms. Bowe reviewed the planning updates and the timeline of the MHMP. Cost match status and requirements were reviewed. She explained the draft review process and emphasized this will be the last week to make comments before IEMA submission.

EMA Director Mr. Buckingham emphasized importance of participation. He reminded planning team members to include all mitigation ideas now to make future grant applications easier.

Ms. Bowe opened the meeting for comments on the current draft. Partners double checked essential facilities info, asked questions, and gave feedback on the current draft.

Current FEMA and USDA grant and loan programs were highlighted, to remind partners what opportunities for funding are currently available. Partners were also encouraged to review [grants.gov](https://www.grants.gov) on their own to search for funding; and to review Greater Egypt's website to see the services that are offered to communities in the region.

Ryan Buckingham made closing remarks on the appreciation of planning partners

Meeting materials will be available at: <http://greateregypt.org/hazard-mitigation-planning/>.

The meeting was adjourned.

Meeting Attendance
Meeting 4: December 8, 2022 10:00AM
Name
Kelsey Bowe
Ryan Buckingham
Lynsey Hopkins
Bureau Chief Matt Warren
Tamara Caffey-Bey
Kevin Kaytor
Heather Morse
Amos Abbott
Cathy Lamont
Gayla Prather
John Owens
Thomas Beebe
Jeremy Childers
Shelly Alexander
Buddy Adelsberger
Judith Courter
Chris Ely
Tina Bymaster
Marty Hagan
Gary Bartolotti
Shari Arondelli
Larry Sanders
Keith Thomason

Jane Southerd
Arien Herrmann
Darla Fitzjerrells
Mike Rasnic



## Appendix 5 Press releases and news articles

D8 | SATURDAY-SUNDAY, SEPTEMBER 18-19, 2021

Phase I request areas include 2.6 acres of high capability and 1.7 acres of limited capability consisted of final grading, soil replacement and erosion control. Reclamation on the Phase II request areas including 66.1 acres of High Capability Wildlife-Woody, 124.4 acres of Limited Capability Wildlife-Woody, 3.0 acres of Limited Capability Wildlife-Wetland and 19.4 acres of Limited Capability Water consisted of vegetation establishment. Reclamation on the Phase III request areas including 66.1 acres of High Capability Wildlife-Woody, 124.4 acres of Limited Capability Wildlife-Woody, 3.0 acres of Limited Capability Wildlife-Wetland and 19.4 acres of Limited Capability Water consisted of vegetation establishment and the expiration of the liability period. The amount of bond being held under Permit No. 398 is \$2,089,555.00 for 387.8 acres. Knight Hawk Coal, LLC is requesting release of Phase I (60%) surety bonds on a total of 23.9 acres, Phase II (25%) on a total of 57.3 acres and Phase III (15%) surety bonds on 187.6 acres. Affected areas within Permit No. 398 have been reclaimed from 2009 through 2012 in accordance with the approved reclamation plan. Reclamation on the Phase I request areas including 23.2 acres of Prime Farmland and 0.7 acres of High Capability Wildlife-Herbaceous consisting of soil replacement and erosion control. Reclamation on the Phase II request areas including 57.3 acres of Prime Farmland consisted of vegetation establishment and/or productivity. Reclamation on the Phase III request areas including 187.6 acres of Prime Farmland consisted of vegetation establishment and/or productivity and the expiration of the liability period. Written comments or objections to the proposed bond release, and requests for a public hearing or informal conference, pursuant to 62 Ill. Adm. Code 1800.40(e),

notice. Comments, objections and requests for hearing or informal conference may be sent to Illinois Department of Natural Resources, Office of Mines and Minerals, Land Reclamation Division, One Natural Resources Way, Springfield, Illinois 62707-1271. 22574 9/11, 9/18, 9/25, 10/2

### IN THE CIRCUIT COURT OF THE FIRST JUDICIAL CIRCUIT JACKSON COUNTY, ILLINOIS

IN THE MATTER OF THE ESTATE OF ADAM D. ARNETT, DECEASED No. 21-P-88 CLAIM NOTICE

Notice is given of the death of Adam D. Arnett of Jackson County, Illinois. Letters of Office were issued on September 2, 2021, to Cheryl A. Arnett, as Independent Administrator, whose attorney is Richard L. Blake of Reed, Heller & Cannell, 1100 Walnut Street, Murphysboro, Illinois 62966. Claims against the estate may be filed in the Office of the Clerk of the Court at Jackson County Courthouse, Murphysboro, Illinois, or with the representative, or both, on or before March 12, 2022, and any claim not filed within that period is barred. Copies of a claim filed with the Clerk must be mailed or delivered to the representative and to the attorney within ten (10) days after it has been filed.

Furthermore, the claimant shall file with the Court proof of any required mailing or delivery of copies. E-Filing is now mandatory for documents in civil cases with limited exemptions. To e-file, you must first create an account with an e-filing service provider. Visit <https://efile.illinoiscourts.gov/service-providers> to learn more and to select a service provider. If you need additional help or have trouble e-filing, visit <http://www.illinoiscourts.gov/FAQ/gethelp.asp>, or talk to

Cora Smith Unit #C123; Kaylin McBride Unit #D226; Tiffany Hale Unit #A023; Tammy George Unit #C122; Adreauna Bell Unit #C177; Alexander Iwao Unit #D245. All property is being stored at the above self-storage facility. This sale may be withdrawn at any time without notice. Certain terms and conditions apply. See manager for details. 22323 8/18, 8/25

### PUBLIC NOTICE

The South Highway Water District will be flushing all water hydrants in the district beginning Friday, October 1, 2021 through December, 2021. Water may be discolored or have air in the lines. It is recommended when discolored/or air in the lines to flush water for 3 to 5 minutes. 22608 9/18, 9/25, 10/2

### Public Meeting Notice

Franklin County EMA and Greater Egypt will host a public meeting Thursday, September 23 at 10:00 AM to provide information and receive public input on the update to the Franklin County Multi-Hazard Mitigation Plan. The meeting will be held through Zoom. You can find the meeting information by visiting [greateregypt.org/hazard-mitigation-planning](http://greateregypt.org/hazard-mitigation-planning). 22624 9/18

### PUBLIC MEETING NOTICE

Greater Egypt will be hosting a public open house meeting for the Kinkaid Creek Watershed-based Plan on Thursday, September 23 at 6:00 PM. The location is the Murphysboro City Hall, 202 N 11th Street. This meeting will serve to give the public an opportunity to learn and comment on the plan. More information can be found at [greateregypt.org/kinkaid-creek-watershed-based-plan](http://greateregypt.org/kinkaid-creek-watershed-based-plan). 22630 9/18

the Director for Purchasing, Room C228, John A. Logan College, Carterville, Illinois.

Immediately after closing time for receiving bids, they will be publicly opened. DBE firms certified with Illinois CMS are encouraged to submit a bid. Further information and specifications for the proposal may be obtained, starting Monday, September 20, 2021 by contacting: JALC Director of Purchasing 700 Logan College Rd., Room C228, Carterville, IL 62918 E-mail: [Sue.Zamora@jalc.edu](mailto:Sue.Zamora@jalc.edu); Phone: 618 985 2828 ext. 8260 22639 9/18

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## 2 Bedroom ~ 1 Bathroom Home

Online Only Real Estate Auction

603 North Johnson Street, Marion, IL 62959

Begins to End Monday 6:30 pm September 27, 2021



### It's a Cute Little House

Walk in the front entryway and to the right is a small coat area. The Entryway is open to the living room. Left is to the hallway where the first bedroom is located along with the full bathroom and hall closet. Back through the living room we go to the kitchen, which has quite a bit of cabinet space and a pantry. An electric range comes with the home. From the

## Appendix 6 Mitigation Related Grant Opportunities

Below is a list of current federal and state grant programs related to various hazard mitigation topics. This list may not be exhaustive and planning partners are encouraged to conduct their own searches for grants to match a project idea. Please note these programs may not be active at all times of the year, and some programs may be cancelled during the 5-year cycle that this Plan is active. A detailed excel spreadsheet can be downloaded for free at <https://greateregypt.org/hazard-mitigation-planning/>

### FEMA Grants

Program Name	Grants Available (if multiple)	Projects Covered	Who Can Apply
Hazard Mitigation Grant Program (HMGP)		Available after federally declared disasters, provides funding to rebuild structures in a way to mitigate future problems	state, local, tribal and territorial governments
Flood Mitigation Assistance (FMA) Grant		Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage, competitive grant, projects are chosen for cost effectiveness and eligibility	state, local, tribal and territorial governments that have FEMA approved hazard mitigation plans in place and are part of the NFIP
Building Resilient Infrastructure and Communities (BRIC)		variety of hazard mitigation projects can be approved under this program	state, local, tribal and territorial governments
Emergency Food and Shelter Program (EFSP)		funds projects to provide shelter, food, and supportive services to individuals and families who are experiencing, or at risk of experiencing, hunger and/or homelessness	funds dispersed to local nonprofit and governmental social service organizations through EFSP National Board allocations
Resilience Grants	National Dam Safety Program (NDSP) State Assistance		
	Rehabilitation Of High Hazard Potential Dam (HHPD) Grant Program		
	National Earthquake Technical Assistance Program (NETAP)		
	Multi-State and National Earthquake Assistance (MSNEA)		nonprofit organizations and institutions of higher education that possess the critical skills necessary to develop and implement regional (multi-state) and/or national earthquake risk mitigation activities.

## **FEMA Preparedness Grants**

\*In Illinois, IEMA must apply for these funds on behalf of state and local organizations

- Emergency Management Performance Grant
  - Enhancing and sustaining all-hazards emergency management capabilities.
- Tribal Homeland Security Grant
  - Preventing, preparing for, protecting against and responding to acts of terrorism.
- Transit Security Grant
  - Protecting critical public transportation systems (intra-city bus, ferries and all forms of passenger rail) from acts of terrorism.
- Intercity Passenger Rail Grant – Amtrak
  - Protecting Amtrak rail system from acts of terrorism.
- Homeland Security Grant
  - Preventing, preparing for, protecting against and responding to acts of terrorism.
- Nonprofit Security Grant
  - Fund physical security enhancements and activities for nonprofit organizations that are at high risk of a terrorist attack.
- Intercity Bus Security Grant
  - Protecting private operators of intercity over-the-road bus transportation systems from acts of terrorism.
- Port Security Grant
  - Protecting ports from acts of terrorism.
- Assistance to Firefighters Grants
  - Three grant programs focused on enhancing the safety of the public and firefighters in fire-related hazards.
- Presidential Residence Protection Assistance Grant
  - Reimbursements to state and local law enforcement agencies for costs incurred while protecting any non-governmental residence of the president being secured by the United States Secret Service.

- Regional Catastrophic Grant Program
  - Funding for local governments to encourage innovative regional solutions to catastrophic incidents.
- National Earthquake Hazards Reduction Program Grant
  - Funding to support the establishment of earthquake hazards reduction programming and implementation of earthquake safety, mitigation and resilience activities at the local level.

## Other Federal Grants

Agency	Program Name	Grants Available (if multiple)	Projects Covered	Who Can Apply
U.S. Dept of Housing and Urban Development	Community Development Block Grant (CDBG) Program	Public Infrastructure, Housing Rehabilitation Program, Economic Development, Disaster Response	Community Based projects in communities that do not receive HUD allocations	Communities/Local government
U.S. Dept of Agriculture	USDA Direct Community Facility Loan & Grant Program	Loan and Grant programs offered for various projects	provides affordable funding to develop essential community facilities in rural areas	Public organizations, community-based non-profits, or federally recognized Tribes in rural areas (less than 20,000 residents)
U.S. Dept of Agriculture	Rural Utilities Service Water and Environmental Programs (WEP)		construction of water and waste facilities in rural communities	rural communities with populations of 10,000 or less
U.S. Environmental Protection Agency	Brownfields Program	Brownfields Assessment Grants, Brownfields Revolving Loan Fund (RLF) Grants, Brownfields Cleanup Grants, Multipurpose (MP) Grants, Job Training (JT) Grants, Technical Assistance, Training, and Research Grants, State and Tribal Response Program Grants	Various projects related to assessment, outreach, cleanup and research of Brownfield sites impacted by hazardous materials	Varies by grant, check NOFOs, states, tribes, communities and stakeholders may be eligible
Delta Regional Authority	States' Economic Development Assistance Program (SEDAP)	provides direct investment into community-based and regional projects that address the DRA's congressionally mandated four funding categories	FUNDING PRIORITIES: basic public infrastructure, transportation infrastructure, business development & entrepreneurship, workforce development	Greater Egypt handles DRA applications for Franklin, Jackson, Williamson, and Perry counties *Jefferson County does not qualify for DRA funding
Delta Regional Authority	Community Infrastructure Fund (CIF)	This funding is set aside for physical infrastructure projects, may be used on construction projects for flood control, basic public infrastructure, and transportation infrastructure		Greater Egypt handles DRA applications for Franklin, Jackson, Williamson, and Perry counties *Jefferson County does not qualify for DRA funding
Delta Regional Authority	Public Works and Economic Adjustment Assistance (PWEAA) program.			Greater Egypt handles DRA applications for Franklin, Jackson, Williamson, and Perry counties *Jefferson County does not qualify for DRA funding

Agency	Program Name	Grants Available (if multiple)	Projects Covered	Who Can Apply
U.S. Dept of Transportation	Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants		Projects for RAISE funding will be evaluated based on merit criteria that include safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, innovation, and partnership. Within these criteria, the Department will prioritize projects that can demonstrate improvements to racial equity, reduce impacts of climate change and create good-paying jobs.	regional and local governments
U.S. Dept of Transportation-pipeline and hazardous materials safety administration	Assistance for Local Emergency Response Training (ALERT)		hazmat response training for volunteer or remote emergency responders.	The ALERT grant is competitively awarded to non-profit organizations capable of delivering an established curriculum to emergency responders.
U.S. Dept of Transportation-pipeline and hazardous materials safety administration	Hazardous Materials Instructor Training (HMIT) Grant		train-the-trainer program that facilitates the training of hazmat instructors who then conduct training in Hazardous Materials Regulations (HMR) for hazmat employees.	competitively awarded to non-profit organizations that satisfy both of the following eligibility requirements: 1) expertise in conducting hazmat employee training programs and 2) capable of reaching a target population of hazmat employees and including them in the training program.
U.S. Dept of Transportation-pipeline and hazardous materials safety administration	Supplemental Public Sector Training (SPST) Grant		a train-the trainer program that facilitates the training of instructors who then conduct training in hazmat response for individuals with a statutory responsibility to respond to hazmat accidents and incidents.	competitively awarded to national non-profit fire service organizations
U.S. Dept of Transportation-pipeline and hazardous materials safety administration	Community Safety (CS) Grant		enhances the capability of communities to prepare for and respond to hazmat accidents and incidents and supports the training of state and local enforcement personnel who are responsible for enforcing the safe transportation of hazmat	competitively awarded to non-profit organizations
U.S. Dept of Transportation-pipeline and hazardous materials safety administration	State Damage Prevention Grants		establish comprehensive state programs designed to prevent damage to underground pipelines	state authority (or municipality with respect to intrastate gas transportation) that is or will be responsible for preventing damage to underground pipeline facilities is eligible as long as 1) the state participates in the oversight of pipeline transportation pursuant to an annual 49 U.S.C. §60105 certification or 49 U.S.C. §60106 agreement in effect with the Pipeline and Hazardous Materials Safety Administration, and 2) is designated by the state's governor, in writing, as the eligible recipient of the grant funding.

## Illinois Specific Grants

Agency	Program Name	Grants Available (if multiple)	Projects Covered	Who Can Apply
Illinois Clean Energy Community Foundation	Energy Program	K-12 Solar and Wind Schools Grant, First Responders Resilience Pilot Program, PV for Nature/welcome centers, Solar Thermal, Biomass, Advancing Renewable Energy and Emerging Technology Grants, Net Zero Energy Wastewater Treatment Plant Grants	various, see website	various, see website
IEMA and Illinois Terrorism Task Force	Preparedness and Response (PAR) Grant Program		helps enhance statewide emergency preparedness and response	state agencies, public universities, units of local government, and statewide mutual aid organizations
IEMA	Hazardous Materials Emergency Preparedness (HMEP) - IEMA		funds projects designed to increase effectiveness in safely and efficiently handling hazardous materials incidents	state, territorial, tribal, and local governments that have IEMA approved LEPCs in place
Rebuild Illinois capital infrastructure plan of 2019, IDOT	Rebuild Illinois	Rebuild Illinois Transit Capital Grant Program, Rebuild Illinois for Distressed Communities Grant, Fast-Track Public Infrastructure (FTPI) component	\$45 billion worth of investments in roads, bridges, railroads, universities, early childhood centers and state facilities over the next six years	Funding allocated to various groups as laid out in the bill, 3 Grant cycles will open to accept proposals for IDOT projects **cannot find a webpage that lays out all contents of bill with grant application info, some have expired and the new fiscal year openings are not online
IL American Water	ENVIRONMENTAL GRANT PROGRAM	funding for innovative, community-based environmental projects that improve, restore or protect the watersheds, surface water and groundwater supplies in our local communities.	Located within an American Water service area Completed between May and November of the grant funding year Be a new or innovative community initiative, or serve as significant expansion to an existing program.	Local, State, Federal government bodies. 501c certified non profit organizations

## IEPA Grants

Agency	Program Name	Grants Available (if multiple)	Projects Covered	Who Can Apply
IEPA	Unsewered Communities	Planning Grant Program, Construction Grant Program	Project planning and construction for unsewered communities to develop and/or update wastewater treatment programs	Local government units
IEPA	Wastewater/Stormwater and Drinking Water Loans	Water Pollution Control Loan Program (WPCLP), Public Water Supply Loan Program (PWSLP)	Our programs provide financial assistance to eligible public or private applicants for the design and construction of a wide variety of projects that protect or improve the quality of Illinois' water resources. We assist applicants with projects that address human health and failing water infrastructure. Eligible projects include new drinking water or wastewater infrastructure construction; upgrading or rehabilitating existing infrastructure; storm water-related projects that benefit water quality; and a variety of other projects that protect or improve the quality of Illinois's rivers, streams, and lakes.	local government and private entities
IEPA	Energy Efficiency at Waste Water Treatment Plants	Public Water Infrastructure Energy Assessments, Waste Water Treatment Plant (WWTP) Energy Efficiency Grant	no-cost energy usage assessments to publicly owned water facilities. The final assessment reports break down recommendations for energy efficiency improvements at each facility and include upfront costs for equipment upgrades or retrofits, estimated time for return of investment, and savings resulting from upgrades and retrofits.	local governments, grant funds available only if municipality has completed an energy assessment within last 5 years
IEPA	Water Quality	Water Quality Management (604b), Nonpoint source Pollution (319), and green infrastructure grants	development of watershed-based plans, outreach/education related to water quality, develop preliminary management practices, implementation of BMPs; (stormwater management, flood control, pollution control, and other projects may be covered)	Greater Egypt applies for water quality grants on behalf of municipalities or other groups in our counties
IEPA	Low Income Residential Energy Efficiency Program	Energy Efficiency Trust Fund (EE Trust Fund)	<ul style="list-style-type: none"> <li>Building Envelope insulation</li> <li>Window replacement</li> <li>Space heating and cooling equipment retrofit</li> <li>Heating and cooling distribution system retrofit</li> <li>Installation of efficient domestic hot water equipment</li> <li>Lighting upgrades (indoor and/or outdoor)</li> <li>High-efficiency appliance installation/replacement</li> <li>Programmable thermostats installation</li> <li>Energy metering changes</li> </ul>	local governments, public housing authorities, other non-profits



## Appendix 7 Adopting Resolutions

VII  
6

Resolution # 2023-12

### ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Franklin County, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

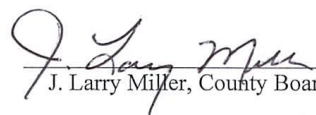
WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, Franklin County participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that Franklin County, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 17<sup>TH</sup> Day of APRIL, 2023.

  
J. Larry Miller, County Board Chair



Attested by:

Kevin Wilson  
County Clerk & Recorder

YEAS: 9

NAYS: 0

ABST: 0

Resolution # 23-09

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Benton, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Benton participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Benton, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 27<sup>th</sup> Day of March, 2023.

And Korditz  
Mayor

David A. Karwala  
City Council Member

[Signature]  
City Council Member

[Signature]  
City Council Member

[Signature]  
City Council Member

[Signature]  
Attested by: City Clerk



Resolution # 04-20

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Buckner, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Buckner participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Buckner, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 20th Day of April, 2023.

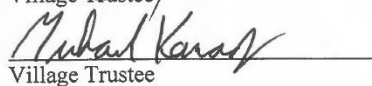
  
Village President


  
Village Trustee


  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Attested by: Village Clerk



173 pages

Resolution # 23-14

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Christopher, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Christopher participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Christopher, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 14 Day of August, 2023.

  
Mayor

Matt Claxton  
City Council Member

Bobby Arandelli  
City Council Member

Marian Furlow  
City Council Member

Donnie Micko  
City Council Member

  
Attested by: City Clerk

Brian Harris  
City Council Member

Tom Korgay  
City Council Member



Resolution # 2023-A

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Freeman Spur, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Freeman Spur participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Freeman Spur, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 15<sup>th</sup> Day of August, 2023.

Shawn M. Baldi  
Village President

Donald Hickman  
Village Trustee

Ernest Hansen  
Village Trustee

Alfred W. Buehler  
Village Trustee

\_\_\_\_\_  
Village Trustee

\_\_\_\_\_  
Village Trustee

\_\_\_\_\_  
Village Trustee

Carol J. Baldi  
Attested by: Village Clerk

Resolution # 2023 AB

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Hanaford (Logan), Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Hanaford (Logan) participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Hanaford (Logan), Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 27<sup>th</sup> Day of July, 2023.

Daisy M Melvin  
Village President

[Signature]  
Village Trustee

[Signature]  
Village Trustee

[Signature]  
Village Trustee

[Signature]  
Village Trustee

[Signature]  
Village Trustee

\_\_\_\_\_  
Village Trustee

[Signature]  
Attested by: Village Clerk

Scanned with CamScanner

Resolution # 2023-07-01

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of North City (Coello), Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

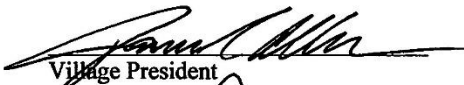
WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

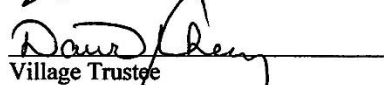
WHEREAS, the Village of North City (Coello) participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of North City (Coello), Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 11th Day of July, 2023.

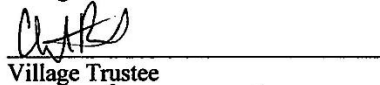
  
Village President

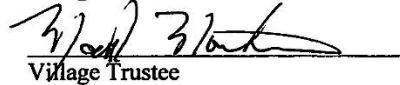
  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Attested by: Village Clerk

Resolution # TJ4-131

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of West Frankfort, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

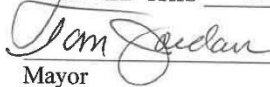
WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of West Frankfort participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of West Frankfort, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 29<sup>th</sup> Day of March, 2023.

  
Mayor

  
City Council Member

  
City Council Member

  
City Council Member

  
City Council Member

  
Attested by: City Clerk



Resolution # 2023-034

ADOPTING THE FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Royalton, Illinois recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the Village of Royalton participated jointly in the planning process with the other local units of government within the County to update the 2015 Multi-Hazard Mitigation Plan;

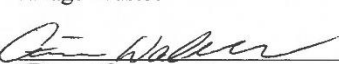
NOW, THEREFORE, BE IT RESOLVED, that the Village of Royalton, Illinois hereby adopts the updated Franklin County Multi-Hazard Mitigation Plan as an official plan; and


BE IT FURTHER RESOLVED that the Franklin County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 3rd Day of April, 2023.

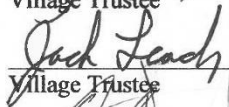
  
Village President


  
Village Trustee

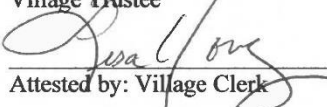
  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Village Trustee

  
Attested by: Village Clerk