Jefferson County, Illinois Multi-Hazard Mitigation Plan

A 2015 Update of the 2009 Countywide MHMP

FEMA

IEMA
ILLINOIS EMERGENCY MANAGEMENT AGENCY

Mitigation Preparedness Response Recovery
EMA
Jefferson County, Illinois

GREATER EGYPT REGIONAL PLANNING & DEVELOPMENT COMMISSION

SIU
Southern Illinois University
CARBONDALE

Multi-Hazard Mitigation Plan

Jefferson County, Illinois

Adoption Date: -- _____ --

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Acknowledgements

The Jefferson County Multi-Hazard Mitigation Plan would not have been possible without the incredible feedback, input, and expertise provided by the County leadership, citizens, staff, federal and state agencies, and volunteers. We would like to give special thank you to the citizens not mentioned below who freely gave their time and input in hopes of building a stronger, more progressive County. Jefferson County gratefully acknowledges the following people for the time, energy and resources given to create the Jefferson County Multi-Hazard Mitigation Plan.

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Section 1. Introduction

Hazard mitigation is any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) makes reducing hazards one of its primary goals; hazard-mitigation planning and the subsequent implementation of mitigation projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created Hazus Multi-Hazard (Hazus-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to estimate losses from floods, hurricanes, earthquakes, and other natural hazards and to measure the impact of various mitigation practices that might help reduce those losses. The Illinois Emergency Management Agency (IEMA) has determined that Hazus-MH should play a critical role in the risk assessments performed in Illinois.

Jefferson County completed their first Multi-Hazard Mitigation Plan in 2009. Throughout the five-year planning cycle, the Jefferson County Emergency Management Agency and Mitigation Planning Team reconvened to monitor, evaluate, and update the plan on an annual basis. The Natural Hazards Research and Mitigation Group at Southern Illinois University Carbondale (SIU), Greater Egypt Regional Planning and Development Commission (Greater Egypt) and Jefferson County have joined efforts in updating the County's first mitigation plan. The update process addressed changes in the probability and impact of specific hazards to the county, as well as changes in land-use, population, and demographics. The plan incorporates detailed GIS and Hazus-MH Level 2 analyses to improve the risk assessment, and finally revised and updated mitigation strategies. This document hereby serves as Jefferson County's Multi-Hazard Mitigation Plan update.

Section 2. Planning Process

2.1 Timeline

The MHMP update process is broken into a series of four meetings. These meetings were organized by SIU, Greater Egypt and hosted by the Jefferson County Emergency Management Agency. At these meetings, various tasks were completed by SIU, Greater Egypt, and the Jefferson County Mitigation Planning Team.

Meeting 1: Introduction of the MHMP process and organize resources. SIU gathered local resources that contributed to the detailed county risk assessment and presented the county's historical hazards. Based on this information, the Planning Team re-ranked the list of hazards from the previous mitigation plan by potential damages and occurrences, and identified additional natural hazards to include in the plan.

Meeting 2: SIU presented the draft risk assessment, derived from the Hazus-MH and GIS modeling of the identified disasters, to the Planning Team. The general public was invited to this meeting through a series of newspaper articles and/or radio spots. At the end of the meeting, SIU encouraged the general public to ask questions and provide input to the planning process, fulfilling one of FEMA's requirements for public input.

Meeting 3: This meeting also consisted of a "brainstorming session." The Planning Team lent local knowledge to identify and prioritize mitigation strategies and projects that can address the threats identified in the risk assessment. FEMA requires the plan to contain mitigation strategies specific to each hazard and for each incorporated area within the county. At this meeting, SIU and Greater Egypt presented options for funding implementation of different mitigation strategies, including a written guide to be distributed to all participants.

Meeting 4: The Planning Team reviewed the draft plan and, proposed revisions, and accepted the plan after SIU incorporated the necessary changes. Subsequently, SIU forwarded the county MHMP to the mitigation staff at the Illinois Emergency Management Agency (IEMA) for review prior to submitting it to FEMA.

2.2 Jurisdiction Participation Information

Approximately fifty-seven jurisdictions participated in the development of this MHMP with the intent of formally adopting the plan and subsequently fulfill the requirements of the DMA 2000. Various representatives from each jurisdiction were present at the meetings (see Section 2.3 Planning Team Information). Each jurisdiction falls under the one of the following categories: County, City, Village, Town, School, or Non-Profit Organization.

Participating Jurisdictions

County/City/Village

Jefferson County
Belle Rive
Bluford
Bonnie
Centralia
Dix
Ina
Mount Vernon
Nason
Waltonville
Woodlawn

Health Care Institution

Crossroad Community Hospital
SSM Health Good Samaritan Hospital
Southern Illinois Healthcare
Comprehensive Connections

Public Utility

Ameren Illinois
Belle Rive Water
Bluford Water
City of Mount Vernon Public Utilities
Dix-Kell Water & Sewer
Moores Prairie Township Water
White-Wayne Counites Electric Cooperative
Mount Vernon Outland Airport
Northeast Water Company
Rend Lake Conservancy District
Sesser Fire Protection District
Tri-County Electric Cooperative
Waltonville Water
Washington County Water District

Schools

Ashely Grade School #15
Bethel School District #82
Bluford USD #318
Centralia City Schools #135
Centralia High School #200
Ewing Northern Grade School #115
Farrington CCSD #99
Field CCSD #3
Grand Prairie CCSD #6
Hamilton CUSD #10
Kaskaskia College
Kell Grade School #C-2
Mt. Vernon City School District #80
Opdyke-Belle Rive CCDS #5
Raccoon Grade School #C-1
Rend Lake College
Rome CCSD #2
Saint Mary's Parochial School
Salem High School #600
Sesser-Valier CUSD #196
Spring Garden School District #178
Summersville Grade School District #79
Waltonville CUSD #1
Wayne City School Unit #100
Woodlawn Unit District #209
Mt. Vernon High School District #201
McClellan CCDS #12
Woodlawn High School District #205

2.3 Planning Team Information

Steve Lueker, Jefferson County EMA Coordinator, heads the Planning Team. The Planning Team includes representatives from various county departments, municipalities, and public and private utilities. Members of the Planning Team have a common vested interest in the County's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. All members of the Planning Team actively participated in the meetings, reviewed and provided comments on the draft plan, participated in the public input process and the county's formal adoption of the plan.

Jefferson County Planning Team Members

Jurisdiction	Name	Title
Jefferson County	Steve Lueker	EMA Coordinator
	Keith Hertenstein	Volunteer EMA
	Scott Burge	Major, Sheriff Department
	Travis Allen	Sheriff
	Clint Taylor	Chief Deputy Sheriff
	Brandon Simmons	County Engineer
	Mark Stevens	Health Department Administrator
	Robert Beal	Captain, County Fire Protection District
Belle Rive	Kim McCormick	Village President
Bluford	Michael Bullard	Village President
Bonnie	Angela Fulkerson	Village Secretary
	Todd Allen	Mayor
Centralia	Tom Ashby	Mayor
Dix	Larry Mooney	Village President
Ina	Andy Hutchens	Mayor
	Ron Hudson	Police Chief
Mount Vernon	Mary Jane Chesley	Mayor
	Chris Deichmann	Police Chief
	Jim Brown	Fire Chief
	Kevin Sargent	EMA Coordinator / Assistant Fire Chief
	Brian Jennings	Deputy EMA Coordinator
	Trent Page	Assistant Chief of Police
	Janice Gahagan	Community Representative
Nason	Richard Buck	Mayor
Waltonville	Randy Dees	Village President
Woodlawn	Brian Spangler	Mayor
Crossroad Community Hospital	Finney Mathew	CEO
	John Walker	Director of Support Services
Southern Illinois Healthcare	Mike Maddox	Regional Disaster Preparedness Coordinator
	Woddy Thorne	VP Community Affairs
SSM Health Good Samaritan Hospital	Mike Warren	President
Ameren Illinois	Tina Hale	Community Relations Coordinator
	Michael Marx	Managing Supervisor
Belle Rive Water	Kim McCormick	Village President
Bluford Water	Norman Vance	President
Dix-Kell Water & Sewer	Gail McBride	Chairman
	Kevin Sargent	Commissioner
Moores Prairie Township Water	Kathy Dagg	President
Mount Vernon Outland Airport	Chris Collins	Manager
Northeast Water Company	James Hertenstein	Board Member
Rend Lake Conservancy District	Robert Clodi	Project Manager
Tri-County Electric Cooperative	Bruce Barkau	Director of Member Services
Waltonville Water	Randy Dees	Village President
Washington County Water District	Steve Fletcher	CEO
White-Wayne Counties Electric Cooperative	Chris Hopfinger	Systems Engineer
Regional Office of Education	Ron Daniels	Regional Superintendent
Ashely Grade School #15	Brian Hodge	Superintendent
Bethel School District #82	Craig Kujawa	Superintendent

Jurisdiction	Name	Title
Bluford USD #318	Rod Stover	CO- Interim Superintendent
	John Ashby	Co-Interim Superintendent
	Brock Harris	Principal
Centralia City Schools #135	David Rademacher	Superintendent
Centralia High School #200	Chuck Lane	Assistant Principal
Ewing Northern Grade School #115	Kristin Ing	Superintendent
Farrington CCSD #99	Sandra Kabat	Superintendent
Field CCSD #3	Gina Ilbery	Superintendent
	Steve Austin	Principal
Grand Prairie CCSD #6	Ryan Robinson	Superintendent
Hamilton CUSD #10	Jeff Fetcho	Superintendent
Kaskaskia College	Jennings Carter	Director of Physical Plant
Kell Grade School #C-2	Christopher McCann	Superintendent
McClellan CCSD #12	Steve K. Johnson	Administrator
	Charles Peterson	Superintendent
Mt. Vernon City School District #80	Aletta Lawrence	Superintendent
Mt. Vernon High School District #201	Mike Smith	Superintendent
Opdyke-Belle Rive CCDS #5	Debra Blakey	Superintendent
Raccoon Grade School #C-1	Matt Renand	Superintendent
Rend Lake College	Damon Simms	Deputy Chief of Police
Rome CCSD #2	Erik Estill	Superintendent
Saint Mary's Parochial School	Brett Heinzman	Principal
Salem High School #600	Brad Detering	Superintendent
Sesser-Valier CUSD #196	Jason Henry	Superintendent
Spring Garden Elementary School	Craig Clark	Principal
Spring Garden Middle School	Monty Jo Clark	Superintendent
Summersville Grade School District #79	Mark Zahm	Superintendent
Waltonville CUSD #1	Shlonda Horton	Superintendent
Wayne City School Unit #100	Jeffery Mitchell	Superintendent
Woodlawn Grade School	David Larkin	Superintendent
	Tammy Beckham	Principal
Woodlawn High School	Thomas Rude	Principal
Rend Lake College	Damon Sims	Deputy Chief of Police

The DMA 2000 planning regulations require that Planning Team members from each jurisdiction actively participate in the MHMP process. The Planning Team was actively involved on the following components:

- Attending the MHMP meetings
- Providing available assessment and parcel data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

The first MHMP update meeting was held in Mount Vernon, Illinois on September 9th, 2014. Representative from SIU explained the rationale behind the MHMP update process and answered questions from the participants. SIU representatives also provided an overview of GIS/Hazus-MH, described the timeline and the process of mitigation planning.

The Jefferson County Planning Team assembled for four formal meetings. Each meeting was approximately two hours in length. Additional meeting were held outside of the four formal meetings. Appendix A includes the minutes for each meeting. During these meetings, the Planning Team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects for the future, and assisted with preparation of the public participation information.

Planning Meetings

MEETING 1	Sept 9th, 2014
MEETING 2	Jan 6th, 2015
MEETING 3	April 14th, 2015 & June 9th, 2015
MEETING 4	November 5th, 2015

2.4 Public Involvement

The Jefferson County EMA solicited public input throughout the planning process and a public meeting was held on January 6th, 2015 to review the County's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains press releases and/or articles sent to local newspapers throughout the MHMP development process.

2.5 Neighboring Community Involvement

The Planning Team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The Planning Team also invited participation from adjacent counties to obtain their involvement in the planning process.

Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Title/Organization
Ryan Buckingham	Franklin County	EMA Coordinator
Derek Misener	Jackson County	EMA Coordinator
David Searby	Perry County	EMA Coordinator
Kelly Huddleston	Williamson County	EMA Coordinator

2.6 Review of Technical Documents

The Jefferson County Planning Team identified technical documents from key agencies to assist in the planning process. These documents includes land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process incorporated the existing natural hazard mitigation elements from previous planning efforts. The following technical data, reports, and studies were utilized:

Federal Emergency Management Agency
- *Developing the Mitigation Plan (April 2003)*
- *Mitigation Ideas (January 2003)*
- *Local Mitigation Planning Handbook*
- *Flood Insurance Study (September 2010)*

United States Census Bureau
- *County Profile Information*
- *2010 Census Data*
- *American Community Survey (2009-2013)*

NOAA National Climatic Data Center
- *Climate Data*

NOAA / National Water Service Storm Prediction Center
- *Severe Weather Data*

Illinois Emergency Management Agency
- *2013 Illinois Natural Hazard Mitigation Plan*

Illinois Environmental Protection Agency
- *2014 303d Listed Waters and Watershed Maps*

Illinois State Water Survey
- *Climate Data*

Illinois Department of Commerce and Economic Opportunity
- *Community Profiles*

Illinois Department of Public Health
- *Pandemic Influenza Preparedness and Response Plan (2014)*

Centers for Disease Control and Preparedness
- *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States (2007)*

Greater Egypt Regional Planning and Development Commission
- *Comprehensive Economic Development Strategy 2010-2014*

Jefferson County
- *2013 Assessment Records*
- *2013 Countywide GIS Parcel Database*
- *2009 Multi-Hazard Mitigation Plan*
- *2014 Jefferson County LEPC*

Mount Vernon
- *Comprehensive Plan 2019*

2.7 Adoption by Local Government

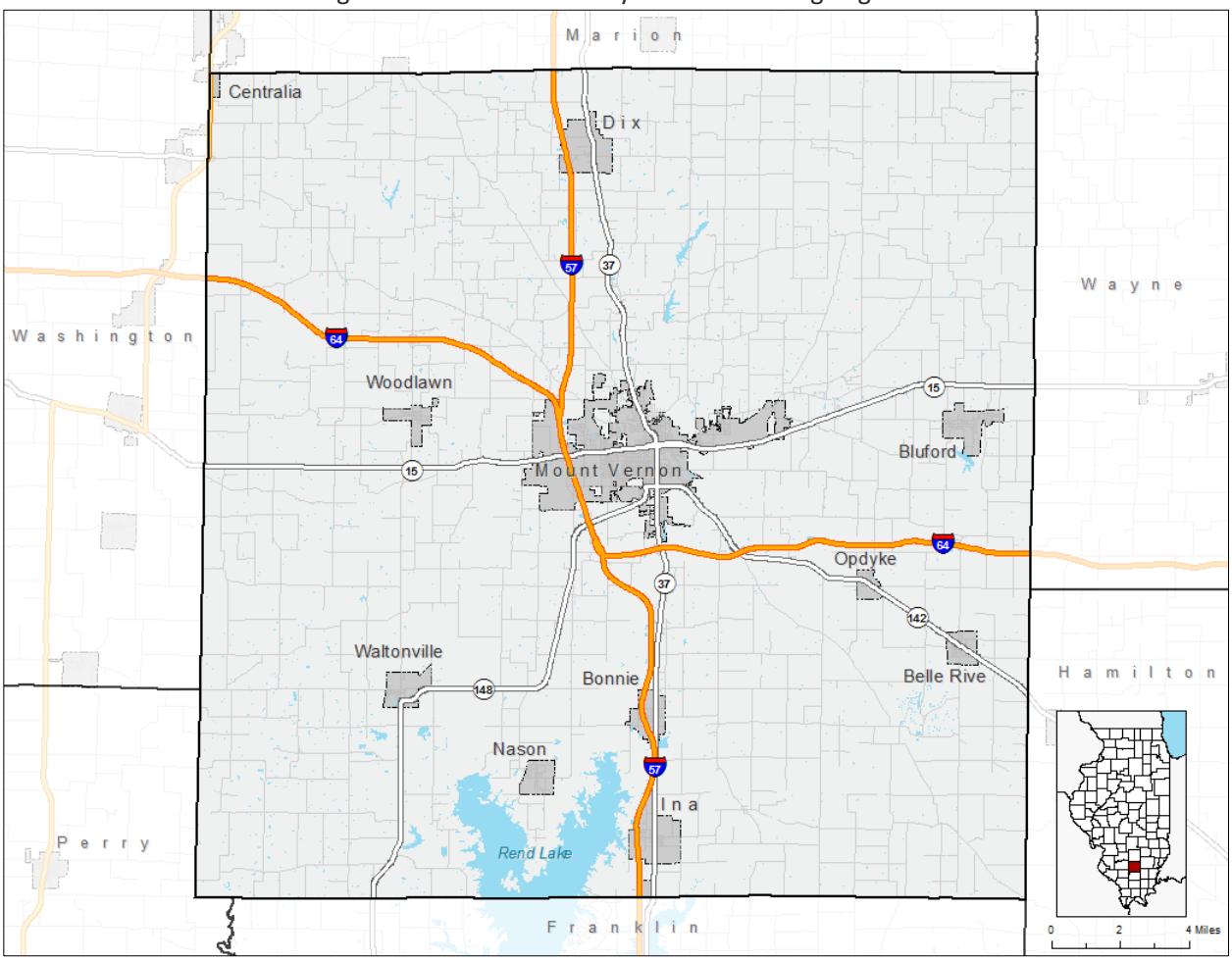
Upon IEMA and FEMA approval, the Planning Team presented and recommended the plan to the County Board for formal adoption. The plan was formally adopted by the Jefferson County Board on <adoption date>. The Planning Team worked with the County and its jurisdictions to ensure all parties formally adopted the plan. Appendix C contains the Adopting Resolutions for each participating jurisdiction.

Section 3. County Profile

3.1 County Background

Jefferson County organized and claimed its boundaries from the division of Edwards County in 1819. In 1823, Marion County's acquisition of Jefferson County's northern territory reformed the county into its current political boundaries. Jefferson County was named in honor of the third President of the United States—the reputed writer and signer of the Declaration of Independence, Thomas Jefferson. In 1819 the location of the county seat was established in Mount Pleasant, which is now Mount Vernon. After the War for Independence, the early inhabitants of Mount Pleasant renamed the community to honor Mount Vernon, Virginia—the home of the "Father of Our Country," George Washington. Mount Vernon was officially organized on June 7, 1819, 73 days following the organization of the State of Illinois. The Illinois Supreme Court was located in Mount Vernon from 1856–1896. Abraham Lincoln argued and won a tax case there in 1859. Figure 3-1 display the geographic location of Jefferson County.

Figure 3-1. Jefferson County and Surrounding Region



Jefferson County is located in the heart of southern of Illinois. It is bounded on the north by Marion County; on the south by Franklin County; on the west by Washington and Perry Counties; and on the east by Wayne and Hamilton Counties. It relates to major urban areas as follows: 78 miles east-southeast of

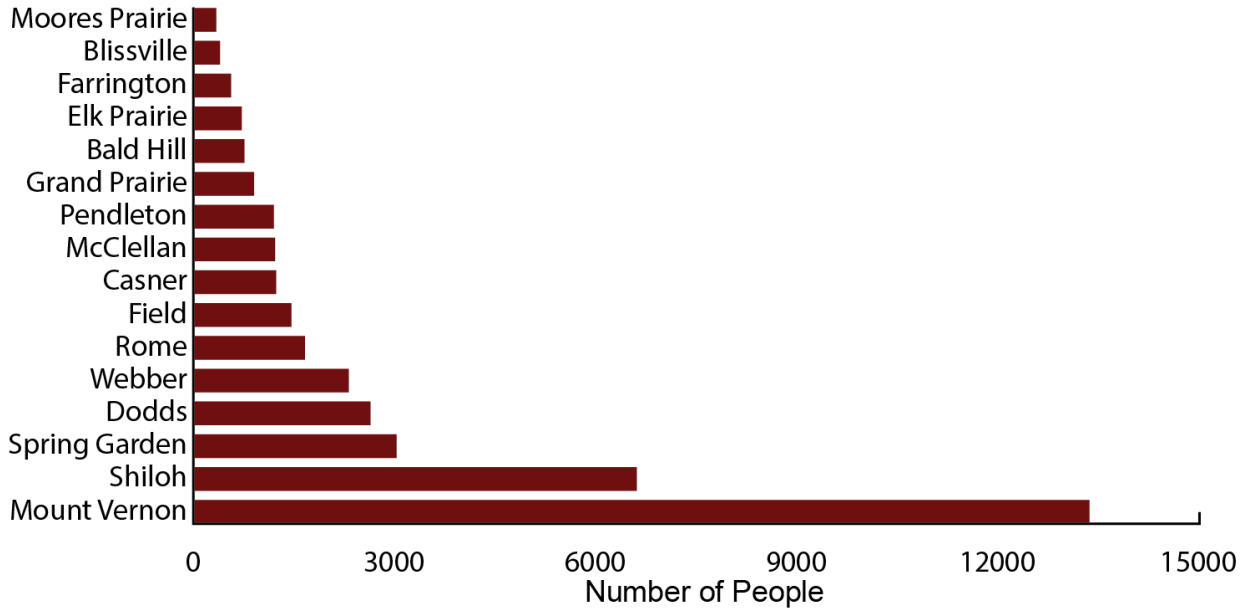
St. Louis, Missouri; 146 miles south-southeast of Springfield, Illinois; 278 miles south-southwest of Chicago, Illinois. Two Interstates bisect Jefferson County: Interstate 57 from north to the south and Interstate 64 from east to west. I-57 stretches from Chicago and through Jefferson County to Sikeston, Missouri. I-64 connects Chesterfield, Missouri to the Hampton Roads metropolitan area of southeast Virginia.

Centrally located, Mount Vernon offers a host of amenities such as shopping centers, local wineries, restaurants, and entertainment. Cedarhurst offers an art museum, a sculpture park, nature trails, and a venue for musical and theatrical productions. Mount Vernon also features a water park and a historical village with log cabins, a blacksmith's shop, and a log jail. Rend Lake Community College was established in 1967 and is located in Ina. Wayne Fitzgerrell State Park is located at Rend Lake. The southern portion of Rend Lake is encompassed by Franklin County. Rend Lake is the largest area of public land in Jefferson County. It draws a large amount of tourists who contribute significantly to the local economy. Rend Lake is managed by the US Army Corps of Engineers; Illinois Department of Natural Resources and the Rend Lake Conservancy District. These agencies provide vital services to lake visitors and the community. The lake offers fishing, hunting, and water recreation facilities and activities. Other communities within the county offer local similar amenities, such as restaurants, entertainment, and shopping on a rural scale.

3.2 Demographics

According to the 2010 U.S. Census, Jefferson County's population was 38,825, a decrease of 0.03% from 2007. As of 2013, Jefferson County's population estimate is 38,644 (American Community Survey, 2013). The population is spread through 16 townships: Bald Hill, Blissville, Casner, Dodds, Elk Prairie, Farrington, Field, Grand Prairie, McClellan, Moores Prairie, Mount Vernon, Pendleton, Rome, Shiloh, Spring Garden and Webber. Figure 3-2 displays the breakdown of population by township from the 2010 Census.

Figure 3-2. Jefferson County 2010 Population by Township



3.3 Economy and Industry

Jefferson County is strategically located along Interstates 57 and 64 and is home to three of the largest employers in Southern Illinois: Continental Tire, Walgreens Distribution Center, and SSM Health Good Samaritan Hospital. Table 3-1 lists the major employers and the approximate number of employees in Jefferson County. The City of Mount Vernon is the hub of economic activity in Jefferson County and Southern Illinois. Recent economic growth includes:

- A new exit, Exit 94 Veterans Drive opened in 2009 and boasts 600 acres for retail, commercial and industrial development
- SSM Health Good Samaritan Hospital $248 million project along Exit 94
- Crossroads Community Hospital $25 million expansion
- The Armory, a $24 million joint use facility for the National Guard and Army Reserves

Manufacturing, retail trade, education, health and social services continue to drive the industrial sectors in Jefferson County (American Community Survey 2009-2013). Education, health care and retail trade, and manufacturing comprise of 50% of the workforce. The 2013 annual per capita income in the county is $22,620, compared to an Illinois average of $29,666. Invitation, minutes, attendance

Table 3-1. Jefferson County's Major Employers

Company Name	Location	Established	Employees	Type of Business
Manufacturing				
Continental Tire of the Americas	Mount Vernon	1973	3300	Tire manufacturer
National Railway	Mount Vernon	1998	300	Rail Engine Manufacturing
Mount Vernon Neon Sign	Mount Vernon	N/A	100	Commercial Signs
Magnum Steel Works	Mount Vernon	2005	79	Miscellaneous Steel Work
Retail Trade				
Wal-Mart	Mount Vernon		350	Food, Clothing, and Goods
Transportation, Warehousing and Utilities				
Walgreen's Distribution Center	Mount Vernon	1990	1400	Regional Distribution
NAPA Distribution Center	Mount Vernon	1990	90	Regional Distribution
Rend Lake Conservancy District	Benton	1965	85	Water Supply
Educational, Health, and Social Services				
SSM Health Good Samaritan Hospital	Mount Vernon	1944	1108	Hospital
Crossroads Community Hospital	Mount Vernon	1982	325	Hospital
Mount Vernon Township High School	Mount Vernon	1982	172	High School Education
Mount Vernon School District #80	Mount Vernon	N/A	255	Elementary School District
Rend Lake Community College	Ina	1966	500	Higher Education
United Methodist Children's Home	Mount Vernon	1966	114	Social Services
Peoples National Bank	Mount Vernon	N/A	118	Banking
Physicians Filing	Mount Vernon	N/A	90	Medical Billing
Orthopedic Center of Southern Illinois	Mount Vernon	1966	85	Healthcare
Public Administration				
City of Mount Vernon	Mount Vernon	1819	172	Municipality Government
Jefferson County	Mount Vernon	1819	203	County Government

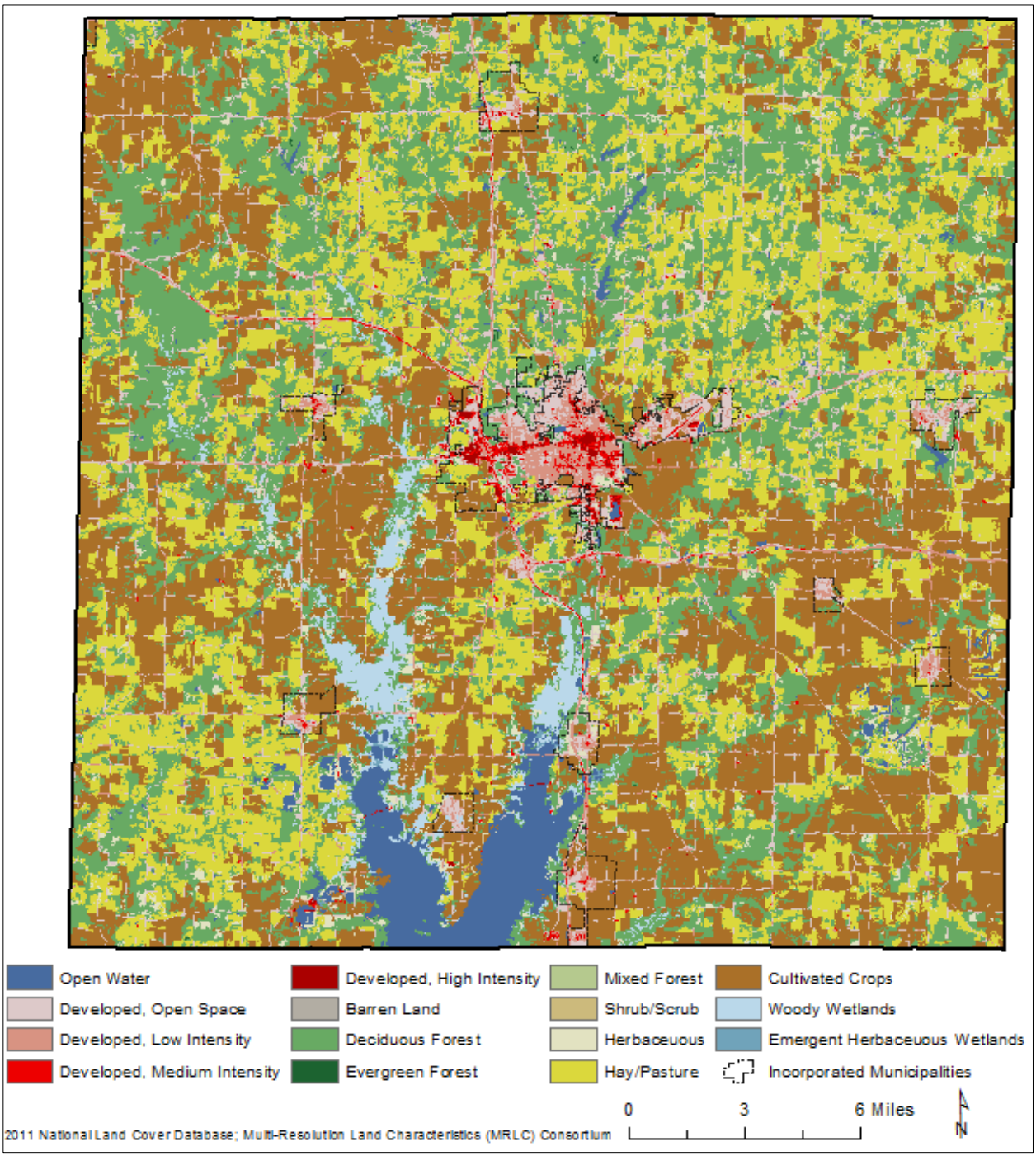
Source: Jefferson County Development Corporation

3.4 Land Use and Development Trends

Today, Jefferson County's single largest land use is agricultural (National Land Cover Database, 2011). Figure 3-3 depicts the land use within Jefferson County. Pre-European settlement, Jefferson County was densely forested with few areas of prairie. Since settlement, agriculture, coal mining, and urbanization have altered the county's land cover. This fact did not result because of great agricultural capabilities of

the land as a major agricultural producer; neither did it occur because of maximum economic development potential resting in agricultural pursuits. Rather it is a result of the existence of large volumes of land which cannot rationally be occupied by major urban uses within the foreseeable future. As a result many agricultural uses have only limited agricultural potential.

Figure 3-3. Land Use in Jefferson County

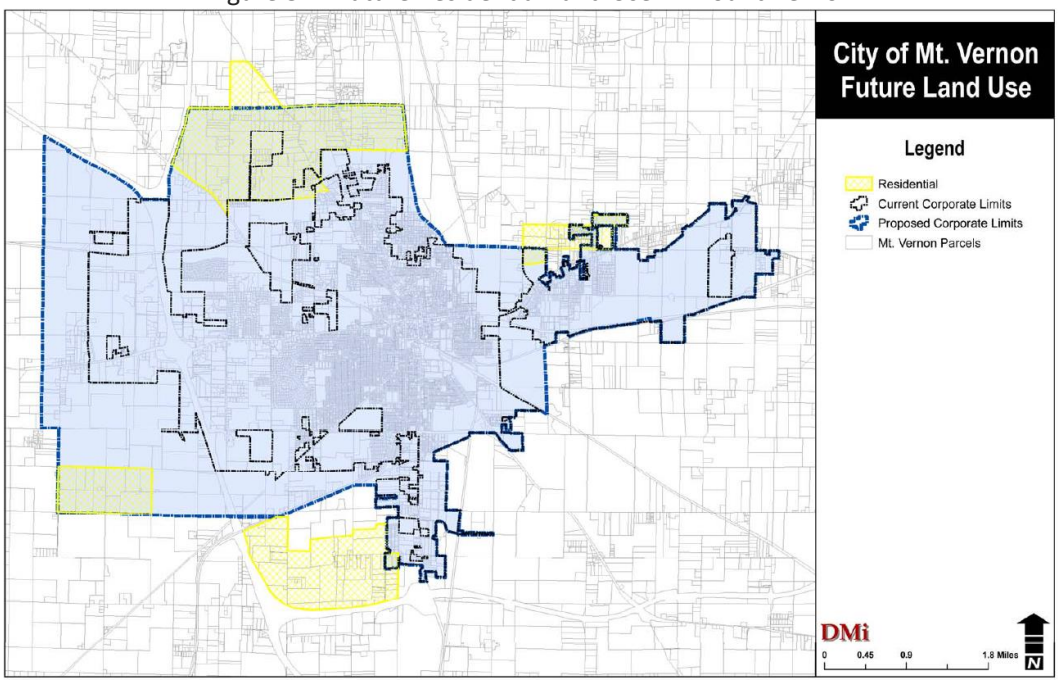


The northeastern and southern portions of the county are the primary areas of agriculture use. Additional scattered areas are located within the urban core in segments which need not be utilized for urban

expansion. These agricultural areas become the overflow areas of future growth. Corn is the primary crop, followed by soybeans, winter wheat, hay, and oats.

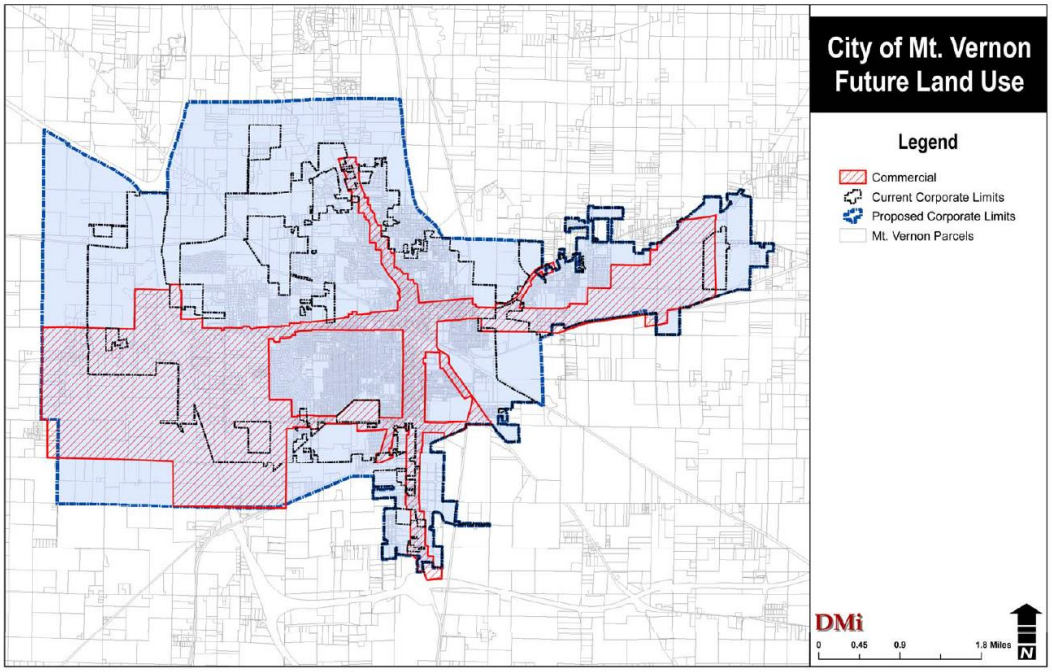
In recent years, residential land use has had significant developments in the Mount Vernon area. The Jefferson County Development Corporation reported that during 2000-2010, there was a shift in development of residential projects just outside of the incorporated area of Mount Vernon. There are very few lots available within the city limits for residential development therefore new housing was built just outside of the incorporated limits of the city. The City of Mount Vernon's 2019 Comprehensive Plan focused on where to plan development both within City Limits and within 1.5 mile extension of corporate limits. Figure 3-4 depicts the future residential land use in Mount Vernon.

Figure 3-4. Future Residential Land Use in Mount Vernon



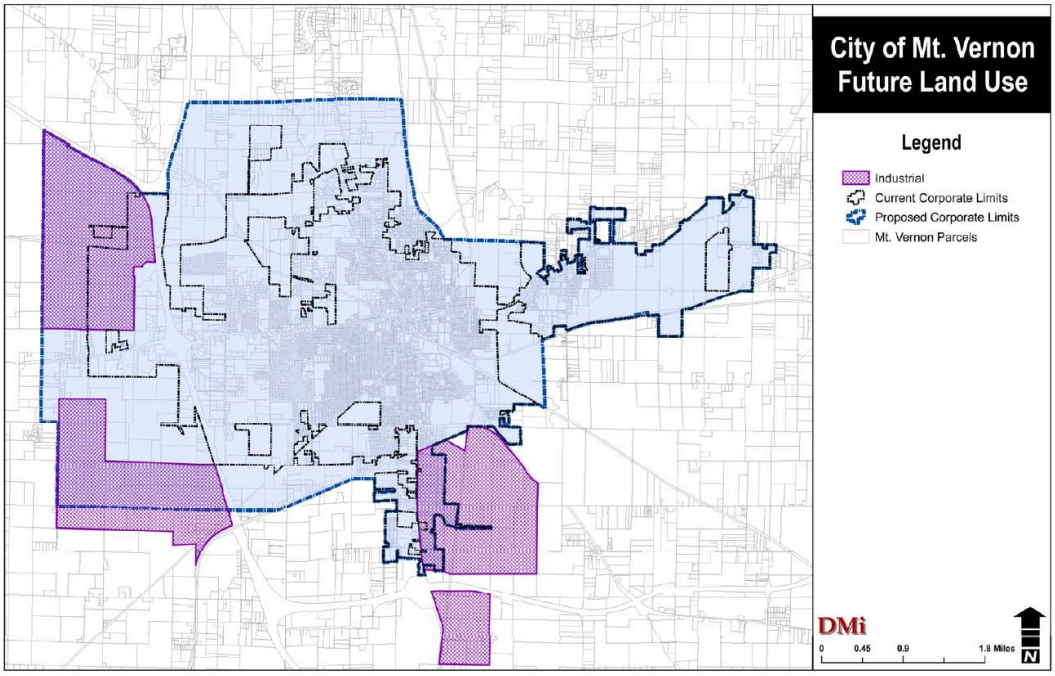
Commercial land use has historically been, and continues to be, concentrated within the business districts of the incorporated municipalities of the county. However, the most recent commercial growth has occurred in and around the City of Mount Vernon. For example, in 2011, SSM Health Good Samaritan Hospital and Crossroads community Hospital completed projects along the new Exit 94 corridor. The City of Mount Vernon's 2019 Comprehensive Plan focused on where to plan development both within City Limits and within 1.5 mile extension of corporate limits. Figure 3-5 depicts the future commercial land use in Mount Vernon.

Figure 3-5. Future Commercial Land Use in Mount Vernon



Industrial land use has been strategically planned and concentrated within Fountain Place Industrial Park and Mount Vernon Industrial Centre. Mount Vernon is the only location economically feasible for industries in the county. Companies that can be found within these industrial areas are Continental Tire N.A. Inc., National Railway, and Walgreens. The City of Mount Vernon's 2019 Comprehensive Plan focused on where to plan development both within City Limits and within 1.5 mile extension of corporate limits. Figure 3-6 depicts the future industrial land use in Mount Vernon.

Figure 3-6. Future Industrial Land Use in Mount Vernon



Coal mining was an important industry in Southern Illinois Region between the 1930s and 1980s. From 1990 through today, the importance of coal mining to the region and Jefferson County has significantly lessened due to more stringent air quality regulations. Regardless, Southern Illinois's coal mining history has left an indelible mark on Jefferson County. In areas that were strip mined, particularly before the Surface Mine Reclamation Action of 1977, the land was left unsuitable for agriculture or significant commercial or residential development. These areas often contain large piles of mine spoil and deep pits filled with water that alter surface water drainage. In Jefferson County, abandoned strip mines are generally found in the Northern portion of Moores Prairie Township, Eastern & Northeastern portions of Bald Hill Township and eastern & southern portions of Elk Prairie Township and southern portions of Blissville & McClellan Townships.

Public land use in Jefferson County includes schools, parks, playgrounds, public utilities, and transportation facilities. The Rend Lake Conservancy District is the most significant public land use shared between Franklin and Jefferson County. Other major areas are Mount Vernon State Game Farm and Rend Lake College. Mount Vernon serves as a natural break for tourists traveling through Southern Illinois. In 2009, IDOT completed the construction of a new interchange at interstate 57/64. The new interchange extended from Veteran's Memorial Drive has improved safety, eased congestion, and improved access in the heavily-traveled area.

3.5 Climate

The climate in Jefferson County is generally characterized by hot dry summers and cool wet winters.
The variables of temperature, precipitation, and snowfall can vary greatly from one year to the next. In summer, the average low is 65.3°F and average high is 88.5°F; however, daily maximum temperatures often exceed 100°F for the period of time (several weeks) between June and September.

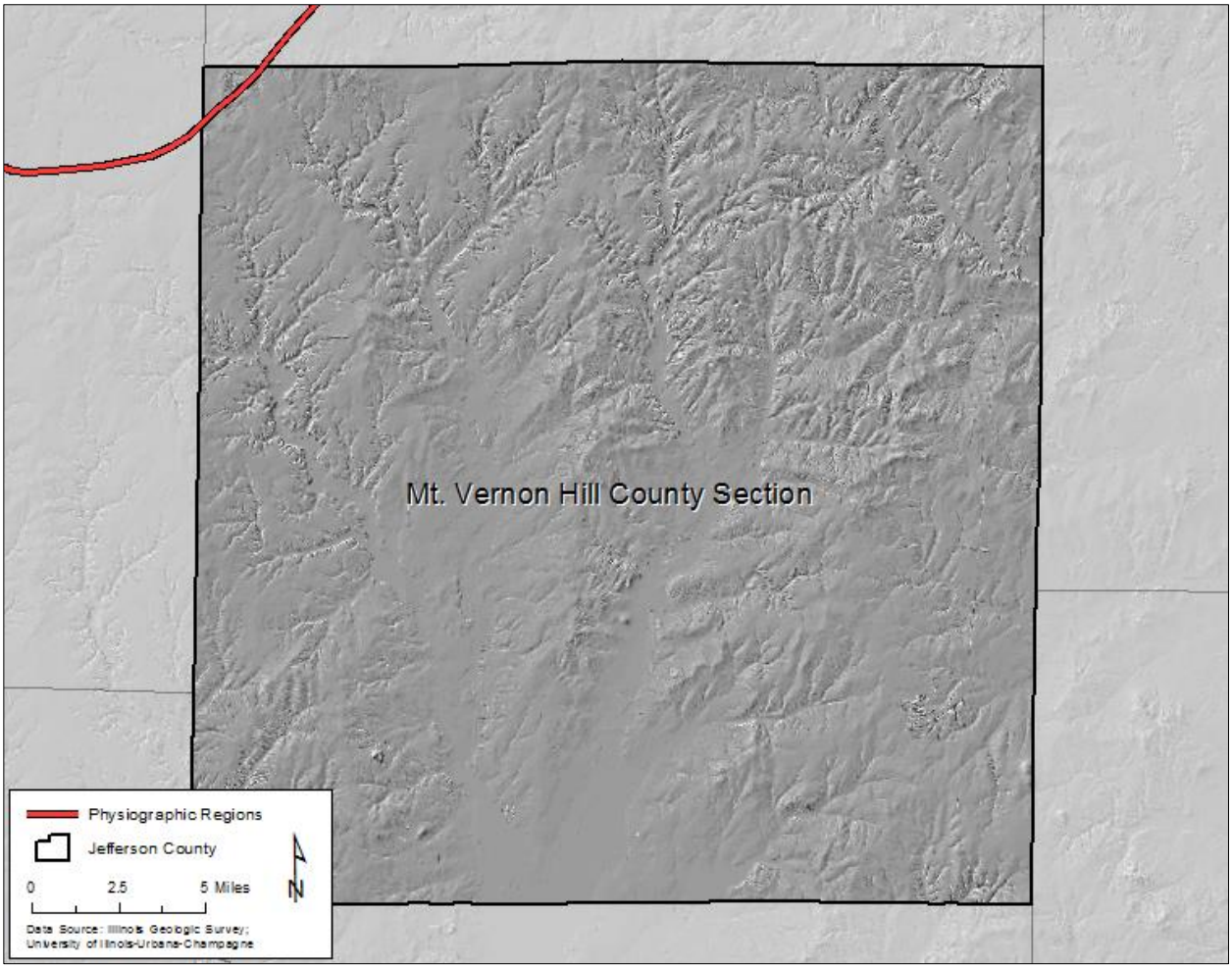
During the fall and into the spring, freezing temperatures can occur any time between October and April. The average low and high temperatures in January are 18.8°F and 37.0°F, respectively. Average annual precipitation is 43.19 inches (NCDC data from 1971 to 2000). While the winters are generally cool, i.e. temperatures are above freezing most days, extended periods (days to a couple of weeks) of sub-freezing high temperatures often occur and are sometimes accompanied by significant amounts of ice and snow.

3.6 Topography

Jefferson County is located in the Mount Vernon Hill Country physiographic sub-division of the Till Plains. Only a small portion of the North-West corner of the Country lies in the Springfield Plain. The Mount Vernon Hill Country is characterized by low rolling hills and broad alluvial valleys along the major streams. The relief in this region is not pronounced. Upland prairies are flat to moderately hilly and the valleys are shallow. The land surface is primarily controlled by bedrock, which has been only slightly modified by glacial drift deposits. While the southern boundary of the Mount Vernon Hill Country lies within a few miles of the limits of glaciations, moraine ridges are essentially absent in the area.

The highest elevation(s) (~600 feet above sea level) in Jefferson County are found in the central northern part of the county near Dix. The lowest elevation(s) (~413 feet above sea level) are found in the central southern portion of the county near Rend Lake. Figure 3-7 depicts the physiographic division within Jefferson County and its characteristics.

Figure 3-7. Physiographic Divisions of Jefferson County and Surrounding Terrain



3.7 Major Lakes, Rivers, and Watersheds

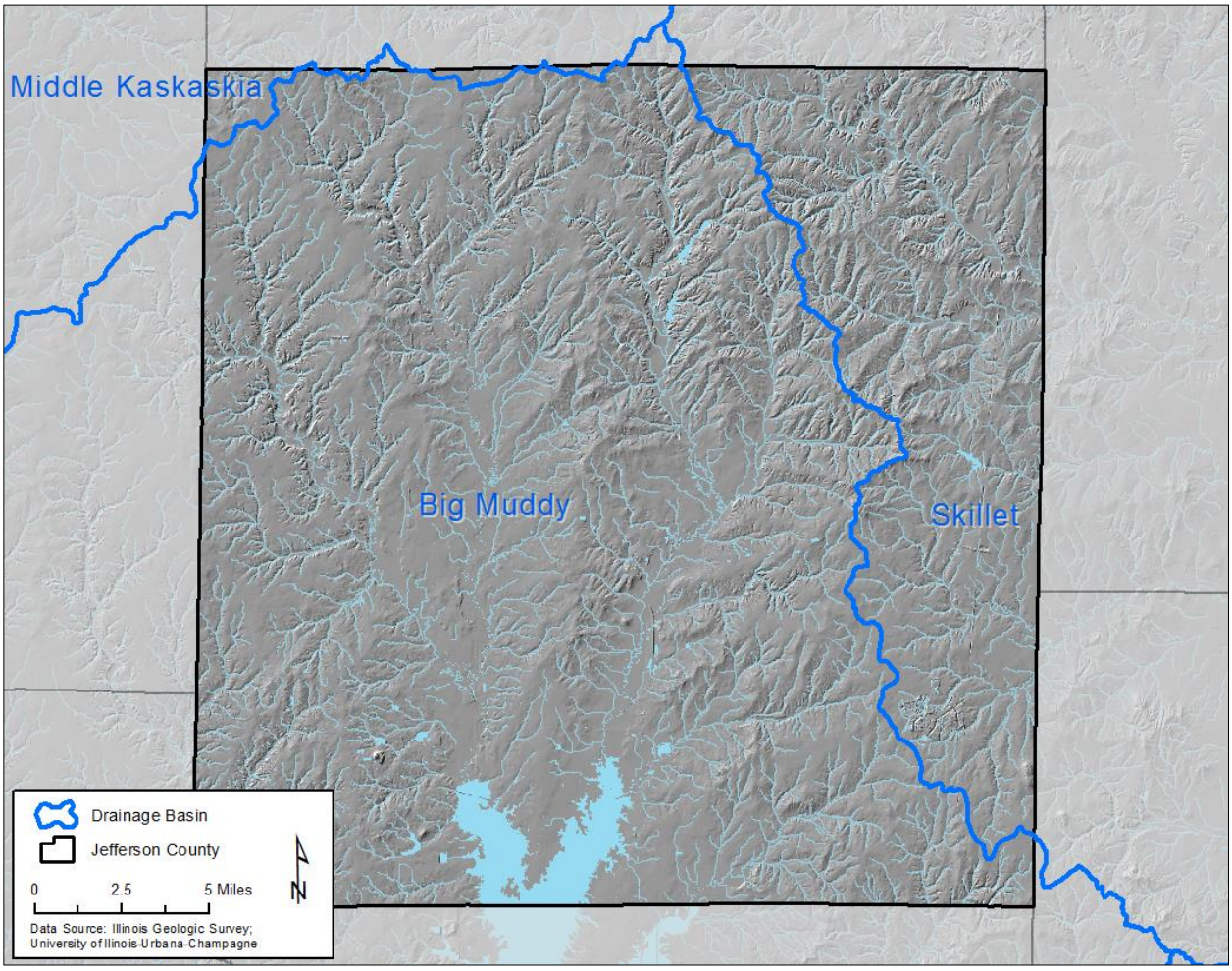
Jefferson County lies on the dividing ridge between the Ohio and Mississippi Rivers. The county crosses three 8-digit Hydrologic Unit Code (HUC) Watersheds: Big Muddy River Watershed, Little and Lower Wabash/Skillet Fork River Watershed, and Middle Kaskaskia River/Shoal Creek Watershed. There are three significant lakes in Jefferson County: Rend Lake, Miller Lake, and Jaycees Lake. Figure 3-8 depicts the hydrologic units within Jefferson County.

The Big Muddy River Watershed, which begins at the center of the northern border of the county, covers the majority of the county from east to west and exits the county to the southwest. Approximately three-fourths of the area of the county lies within this watershed; it has a general slope toward the south, and is drained by the Big Muddy River and its tributaries.

The Little and Lower Wabash/Skillet Fork River Watershed covers approximately one-fourth of the area of the county and lies east of the Big Muddy River Watershed, generally sloping toward the southeast. It is drained by Horse Creek, Fourmile Creek, and Auxier Creek.

The Middle Kaskaskia River/Shoal Creek Watershed covers very small portions of the county in an area west of the Big Muddy River Watershed with a general slope toward the west; it is drained by Sewer Creek (Clinton County).

Figure 3-8. Major drainage basins in Jefferson County



Section 4. Risk Assessment

The goal of mitigation is to reduce future hazard impacts including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation requires a rigorous risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much the disaster could affect the community, and the impact on community assets. This risk assessment consists of three components—hazard identification, vulnerability assessment, and risk analysis.

4.1 Hazard Identification

4.1.1 Existing Plans

The Planning Team identified technical documents from key agencies to assist in the planning process and incorporated the natural hazard mitigation elements from previous 2009 Jefferson County Multi-Hazard Mitigation Planning efforts. Several other documents were used to profile historical hazards and guide the Planning Team during the hazard ranking exercise. Section 2-6 contains a complete list of the technical documents utilized to develop this plan.

4.1.2 National Hazard Records

To assist the Planning Team, historical storm event data from the National Climatic Data Center (NCDC) was complied. NCDC records are estimates of damages reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

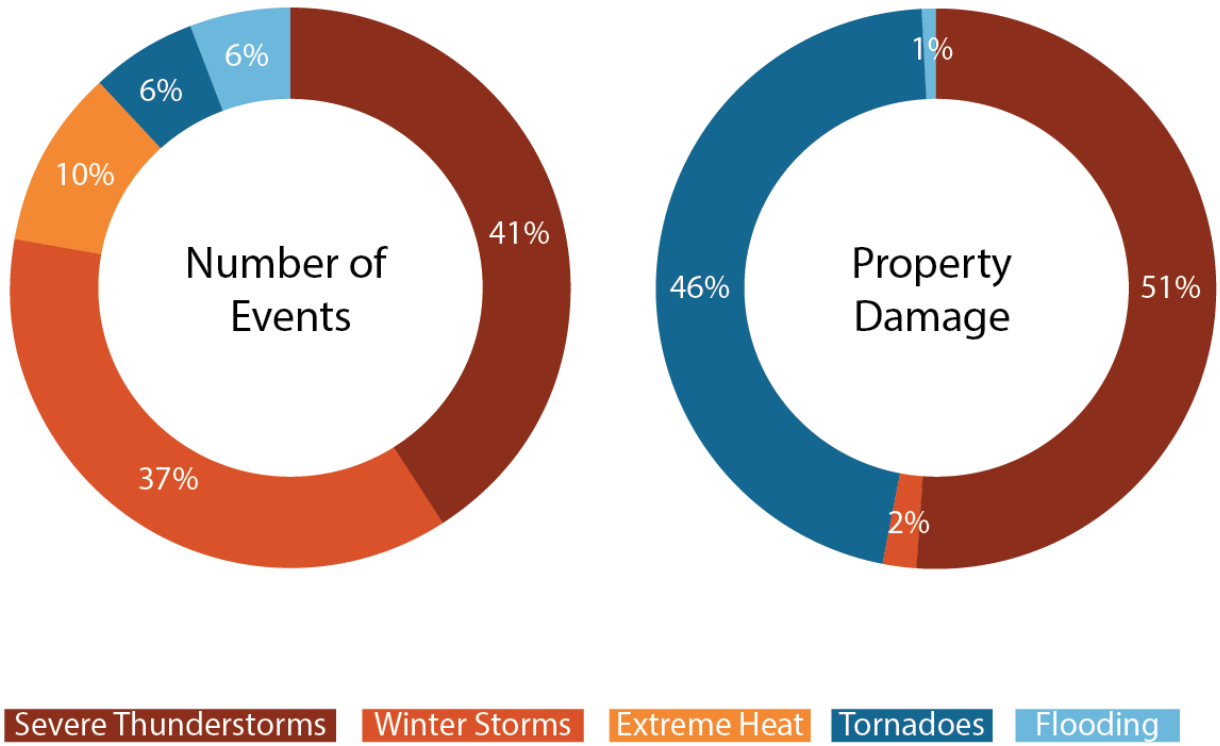
The NCDC database included 41,640 reported meteorological events in Jefferson County from 1950-2014 (the most updated information as of the date of this plan). The following hazard-profile sections each include a summary table of events related to each hazard type. Table 4-1 summarizes the meteorological hazards reported for Jefferson County. Figures 4-1 summarize the relative frequency of NCDC reported meteorological hazards and the percent of total damage associated with each hazard for Jefferson County. Full details of individual hazard events are on the NCDC website. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail was mapped using SPC-recorded latitudes and longitudes. Appendix D includes a map of these events.

Table 4-1. Summary of Meteorological Hazards Reported by the NCDC for Jefferson County

Hazards	Time Period		Number of Events	Property Damage (Millions of Dollars)	Deaths	Injuries
	Start	End				
Flooding	1996	2014	30	$0.18	2	0
Severe Thunderstorms	1955	2014	216	$13.97	0	6
Tornadoes	1957	2014	33	$12.97	3	57
Winter Storms	1996	2014	126	$0.54	1	0
Extreme Heat	1997	2014	56	$0	0	12

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Figure 4-1. Distribution of NCDC Meteorological Hazards for Jefferson County



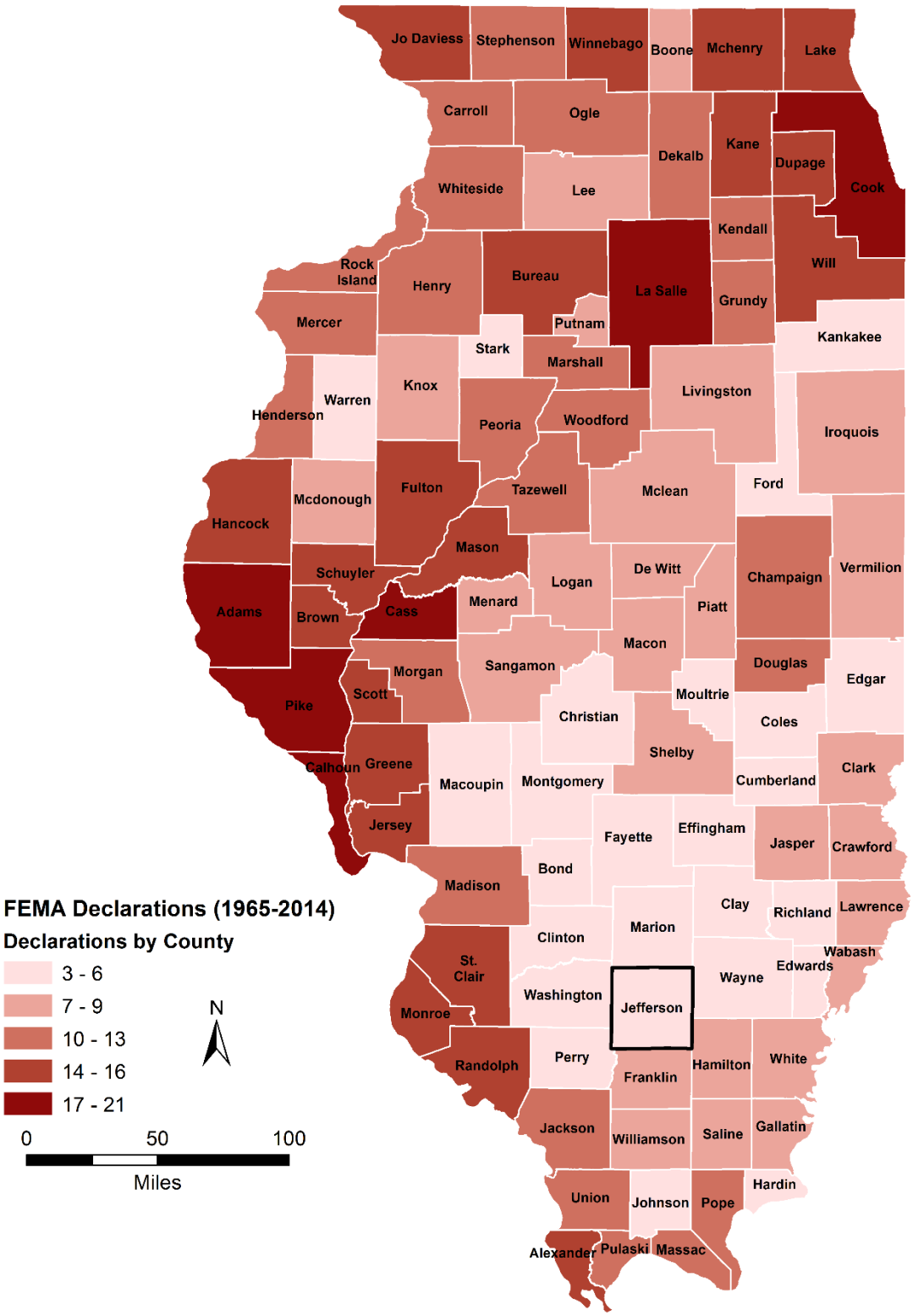
4.1.3 FEMA Disaster Information

Since 1957, FEMA has declared 53 major disasters and 7 emergencies for the state of Illinois. Emergency declarations allow states to access FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding, including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Jefferson County has received federal aid for two declared disasters and one emergency since 1965. Table 4-2 lists specific information for each disaster declaration in Jefferson County. Figure 4-2 depicts the disasters and emergencies that have been declared for the state of Illinois and Jefferson County since 1965.

Table 4-2. Details of FEMA-declared Emergencies and Disasters in Jefferson County

Declaration Number	Date of Declaration	Description
1991	6/7/2011	Severe Storms and Flooding
3230	9/7/2005	Hurricane Katrina Evacuation
1416	5/21/2002	Severe Storms, Tornadoes and Flooding

Figure 4-2. FEMA-declared Emergencies and Disasters in Illinois



4.1.4 Hazard Ranking Methodology

Based on Planning Team input, national datasets, and existing plans, the Jefferson County Planning Team re-ranked the list of hazards from the 2009 MHMP. These hazards ranked the highest based on the Risk Priority Index discussed in Section 4.1.5.

Jefferson County Hazard List

TORNADOES

HAZARDOUS MATERIALS RELEASE

EARTHQUAKES

FLOODING

PANDEMICS / EPIDEMICS

SEVERE THUNDERSTORM

WINTER STORMS

4.1.5 Risk Priority Index

The Risk Priority Index (RPI) quantifies risk as the product of hazard probability and magnitude so Planning Team members can prioritize mitigation strategies for high-risk-priority hazards. Planning Team members use historical hazard data to determine the probability, combined with knowledge of local conditions to determine the possible severity of a hazard. Tables 4-3 and 4-4 display the criteria the Planning Team used to quantify hazard probability and magnitude.

Table 4-3. Hazard Probability Ranking

Probability	Characteristics
4 – Highly Likely	Event is probable within the next calendar year This event has occurred, on average, once every 1-2 years in the past
3 – Likely	Event is probable within the next 10 years Event has a 10-50% chance of occurring in any given year This event has 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 This event has 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 This event has occurred, on average, once every 50-200 years in the past

Table 4-4. Hazard Severity Ranking

Magnitude/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

The product of hazard probability and magnitude is the RPI. The Planning Team members ranked specified hazards based on the RPI, with larger numbers corresponding to greater risk. After evaluating the calculated RPI, the Planning Team adjusted the ranking to better suit the County. Table 4-5 identifies the RPI and adjusted ranking for each hazard specified by the Planning Team.

Table 4-5. Jefferson County Hazard Priority Index and Ranking

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Tornadoes	3	4	12	1
Hazardous Materials Release	4	2	8	2
Earthquakes	2	4	8	3
Flooding	2.75	2	5.5	4
Pandemics / Epidemics	3	2	6	5
Severe Thunderstorm	4	1	4	6
Winter Storm	3	1	3	7

4.1.6 Jurisdictional Hazard Ranking

Each jurisdiction created its own RPI because hazard susceptibility may differ by jurisdiction. During the five-year review of the plan, the Planning Team will update this table to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-6 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern). The individual jurisdictions made these rankings at Meeting 1.

Table 4-6. Hazard Ranking by Jurisdiction

Jurisdiction	Tornadoes	Hazmat	Earthquakes	Flooding	Pandemic /Epidemic	Severe Storms	Winter Storms	Heat /Drought	Ground Failure	Fire
Belle Rive										
Bluford	1	2	3	4	5	6	7	-	-	-
Bonnie	3	-	5	7	-	1	2	4	6	-
Centralia										
Dix										
Ina										
Mount Vernon	1	2	3	4	5	6	7	-	-	-

Jurisdiction	Tornadoes	Hazmat	Earthquakes	Flooding	Pandemic /Epidemic	Severe Storms	Winter Storms	Heat /Drought	Ground Failure	Fire
Nason	1	2	3	4	5	6	7	-	-	-
Waltonville	1	2	3	4	5	6	7	-	-	-
Woodlawn										
Crossroads Community Hospital										
Southern Illinois Healthcare	1	2	3	4	5	6	7	-	-	-
SSM Health Good Samaritan Hospital										
Ameren Illinois										
Dix-Kell Water & Sewer Commission	-	-	1	2	-	3	4	-	-	-
Moores Prairie Township Water Company										
Mount Vernon Outland Airport	1	4	2	-	-	3	5	6	-	-
Northeast Water Company	1	-	3	4	-	2	5	-	-	-
Rend Lake Conservancy District	2	3	1	4	5	6	7	-	-	-
Tri-County Electric Company, Inc.	3	-	4	5	-	1	2	-	-	-
Washington County Water District	-	-	-	-	-	2	1	-	3	-
Wayne-White Electric Coop	1	-	-	3	-	-	2	-	-	-
Ashely Grade School #15	2	4	5	7	-	1	3	6	-	-
Bethel School District #82	3	6	7	5	1	2	4	-	8	-
Bluford USD #318	3	4	5	6	7	2	1	-	-	-
Centralia City Schools #135	1	6	5	4	7	2	3	-	-	-

Jurisdiction	Tornadoes	Hazmat	Earthquakes	Flooding	Pandemic /Epidemic	Severe Storms	Winter Storms	Heat /Drought	Ground Failure	Fire
Centralia High School #200	2	-	6	7	-	1	3	4	5	-
Dodds CCSD #7										
Ewing Northern Grade School #115										
Farrington CCSD #99	1	8	7	5	6	3	2	4	-	-
Field CCSD #3	3	4	5	-	7	1	2	6	-	-
Grand Prairie CCSD #6	2	6	3	7	5	1	4	-	-	-
Hamilton CUSD #10	1	2	3	4	9	6	5	7	8	-
Ina Grade CCSD #8										
Kell Grade School #C-2										
McClellan CCDS #12	1	-	2	-	-	1	3	-	4	-
Mt. Vernon City School District #80										
Mt. Vernon High School District #201										
Mt. Vernon Christian School	1	2	3	4	5	6	7	-	-	-
Opdyke-Belle Rive CCDS #5	3	5	4	6	7	1	2	-	-	-
Raccoon Grade School #C-1	1	-	2	-	-	4	3	5	-	6
Rome CCSD #2	1	5	4	6	7	1	3	-	-	-
Saint Mary's Parochial School										
Salem High School #600										
Sesser-Valier CUSD #196										
Summersville Grade School District #79	3	4	5	-	-	1	2	-	-	-
Waltonville CUSD #1	1	2	4	6	9	3	5	7	8	-
Wayne City School Unit #100										

Jurisdiction	Tornadoes	Hazmat	Earthquakes	Flooding	Pandemic /Epidemic	Severe Storms	Winter Storms	Heat /Drought	Ground Failure	Fire
Woodlawn USD #209	1	4	1	3	-	2	1	-	-	5
Kaskaskia College										
Rend Lake College	2	5	4	-	-	1	3	-	-	-

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

Processes and Sources for Identifying Assets

Before meeting one, the Planning Team used their resources to update the list of critical facilities from the 2009 MHMP. Local GIS data was used to verify the locations of all critical facilities. SIU GIS analysts incorporated these updates and corrections to the Hazus-MH data tables prior to performing the risk assessment. The updated Hazus-MH inventory contributed to a Level 2 analysis, which improved the accuracy of the risk assessment. Jefferson County also provided local assessment and parcel data to estimate the actual number of buildings susceptible to damage for the risk assessment.

Essential Facilities List

Table 4-7 identifies the number of essential facilities identified in Jefferson County. Essential facilities are a subset of critical facilities. Appendix E include a comprehensive list of the essential facilities in Jefferson County and Appendix F displays a large format map of the locations of the critical facilities within the county.

Table 4-7. Jefferson County's Essential Facilities

Facility	Number of Facilities
Care Facilities	12
Emergency Operations Centers	2
Fire Stations	12
Police Stations	4
Schools	33

Facility Replacement Costs

Table 4-8 identifies facility replacement costs and total building exposure. Jefferson County provided local assessment data for updates to replacement costs. Tax-exempt properties such as government buildings, schools, religious and non-profit structures were excluded from this study because they do not have an assessed value. Table 4-8 also includes the estimated number of buildings within each occupancy class.

Table 4-8. Jefferson County‘s Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure
Residential	14,887	$1,280,772,108
Commercial	1,074	$634,089,594
Industrial	46	$165,711,180
Total:	**16,007**	**$2,080,572,882**

Future Development

Jefferson County is expected to see a modest increase in population due to the expansion of existing distribution centers, light industry, and the creation of new opportunities in the service industry such as retail stores, restaurants, and hotels. Most of this expansion is expected to take place within the city of Mount Vernon near the I-57 and I-64 Interchange and along the Route 15.

4.3 Risk Analysis

4.3.1 GIS and Hazus-MH

The third step in the risk assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. The hazards were quantified using GIS analyses and Hazus-MH where possible. This process reflects a Level 2 Hazus-MH analysis. A level 2 Hazus-MH analysis involves substituting selected Hazus-MH default data with local data and improving the accuracy of model predictions.

Updates to the default Hazus-MH data include:

- Updating the Hazus-MH defaults, critical facilities, and essential facilities based on the most recent available data sources.
- Reviewing, revising, and verifying locations of critical and essential point facilities with local input.
- Applying the essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) to the Hazus-MH model data.
- Updating Hazus-MH reports of essential facility losses.

The following assumptions were made during analysis:

- Hazus-MH aggregate data was used to model the building exposure for all earthquake analyses. It is assumed that the aggregate data is an accurate representation of Jefferson County.
- The analyses were restricted to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.
- For each tax-assessment parcel, it is assumed there is only one building that bares all the associated values (both structure and content).
- For each parcel, it is assumed that all structures are wood-framed, one-story, slab-on-grade structures, unless otherwise stated in assessment records. These assumptions are based on sensitivity analyses of Hazus and regional knowledge.

Depending upon the analysis options and the quality of data the user inputs, Hazus-MH generates a combination of site-specific and aggregated loss estimates. Hazus-MH is not intended as a substitute for detailed engineering studies; it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This plan does not fully document the processes and procedures completed in its development, but this documentation is available upon request. Table 4-9 indicates the analysis type (i.e. GIS, Hazus-MH, or historical records) used for each hazard assessment.

Table 4-9. Risk Assessment Tool Used for Each Hazard

Hazard	Risk Assessment Tool(s)
Tornadoes	GIS-based
Hazardous Materials Release	GIS-based

Hazard	Risk Assessment Tool(s)
Earthquakes	Hazus-MH
Flooding	Hazus-MH
Disease Pandemic	Historical Records
Severe Thunderstorm	Historical Records
Winter Storms	Historical Records

4.3.2 Tornado Hazard

Hazard Definition

Tornadoes are violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently rotating column of air can reach the ground quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are a significant risk to Illinois and its citizens. Tornadoes can occur at any time on any day. The unpredictability of tornadoes makes them one of Illinois' most dangerous hazards. Tornado winds are violently destructive in developed and populated areas. Current estimates place maximum wind velocity at about 300 miles per hour, but higher values can occur. A wind velocity of 200 miles per hour results in a pressure of 102.4 pounds per square foot—a load that exceeds the tolerance limits of most buildings. Thus, it is easy to understand why tornadoes can devastate the communities they hit.

Tornadoes are classified according to the Enhanced Fujita tornado intensity scale. The Enhanced Fujita scale ranges from intensity EF0, with effective wind speeds of 40 to 70 miles per hour, to EF5 tornadoes, with effective wind speeds of over 260 miles per hour. Table 4-10 outlines the Enhanced Fujita intensity scale.

Table 4-10. Enhanced Fujita Tornado Rating

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 Gale	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, signboards damaged, shallow-rooted trees blown over.
1 Moderate	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 Significant	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 Severe	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 Devastating	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
5 Incredible	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Previous Occurrences of Tornadoes

There have been several occurrences of tornadoes in Jefferson County during recent decades. The National Climatic Data Center (NCDC) database reported eleven tornadoes/funnel clouds in Jefferson County since 1950. Table 4-11 identifies NCDC-recorded tornadoes that caused damage over $25,000, death, or injury in Jefferson County. Additional details of individual hazard events are on the NCDC website.

The most recent recorded event occurred in November 2014 when supercell thunderstorms developed along a pre-frontal low press trough over Missouri and then moved east across southern Illinois. Strong southerly surface winds ahead of the storms gusted to around 45 mph from Mount Vernon to Carbondale during the midday hours. Several trees were snapped during this brief touchdown on the north side of Interstate 64. Peak winds were estimated near 105 mph. An EF1 was reported near Opdyke, IL.

Table 4-11. NCDC-Recorded Tornadoes That Caused Damage over $25,000, Death, or Injury in Jefferson County

Location or County*	Date	EF-Scale	Deaths	Injuries	Property Damage
Woodlawn	5/25/2011	2	0	0	$4,000,000
Jefferson County	12/18/1957	4	1	45	$2,500,000
Jefferson County	3/30/1982	2	1	3	$2,500,000
Jefferson County	5/1/1983	1	0	0	$2,500,000
Cravat	4/15/1998	2	0	1	$400,000
Jefferson County	2/9/1960	2	0	1	$250,000
Ina	4/19/1996	3	0	0	$200,000
Shirley	3/23/2012	2	1	2	$150,000
Woodlawn	5/30/2004	1	0	0	$100,000
Bluford	4/18/2011	1	0	0	$90,000
Mt Vernon	4/18/2011	1	0	0	$70,000
Texico	3/8/2009	1	0	0	$60,000
Jefferson County	12/18/1957	2	0	0	$50,000
Jefferson County	12/19/1957	2	0	0	$25,000
Jefferson County	5/9/1959	1	0	0	$25,000
Jefferson County	4/20/1966	0	0	0	$25,000
		Total:	**3**	**52**	**$12,945,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk of tornado occurrence. Tornadoes can occur at any location within the county.

Hazard Extent for Tornado Hazard

Historical tornadoes generally moved from southwest to northeast across the county, although many other tracks are possible, from more southerly to northerly directions. The extent of the hazard varies in terms of the size of the tornado, its path, and its wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the probability of future tornadoes in Jefferson County is likely. The County should expect tornadoes with varying magnitudes to occur in the future. Tornadoes ranked as the number one hazard according to the Jefferson County Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	4	=	12

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County.

Critical Facilities

All critical facilities are vulnerable to tornadoes. Critical facilities are susceptible to many of the same impacts as any other building within the jurisdiction. These impacts vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g., damaged home will no longer be habitable, causing residents to seek shelter).

Infrastructure

The types of infrastructure that could be impacted during a tornado include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that any number of these structures could become damaged during a tornado. The impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable rail lines. Bridges could fail or become impassable, causing risk to motorists.

GIS-based Tornado Analysis

One tornado scenario was conducted for Jefferson County through the city of Mount Vernon. The following analysis quantifies the anticipated impacts of tornadoes in the county in terms of numbers and types of buildings and infrastructure damaged.

GIS-overlay modeling was used to determine the potential impacts of an EF4 tornado. The analysis used a hypothetical EF4 path that runs roughly 6 miles through the city of Mount Vernon. Table 4-12 depicts tornado damage curves and path widths utilized for the modeled scenario. The damage curve is based on conceptual wind speeds, path winds, and path lengths from the Enhanced-Fujita Scale guidelines.

Table 4-12. Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Degrees of damage depend on proximity to the path centerline within a given tornado path. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. To model the EF4 tornado, a hypothetical tornado path was used in GIS with buffers added (damage zones) around the tornado path. Table 4-13 and Figure 4-3 illustrate the zone analysis. Figure 4-4 depicts the selected hypothetical tornado path.

Table 4-13. EF4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-3: Tornado Analysis (Damage Curves) Using GIS Buffers

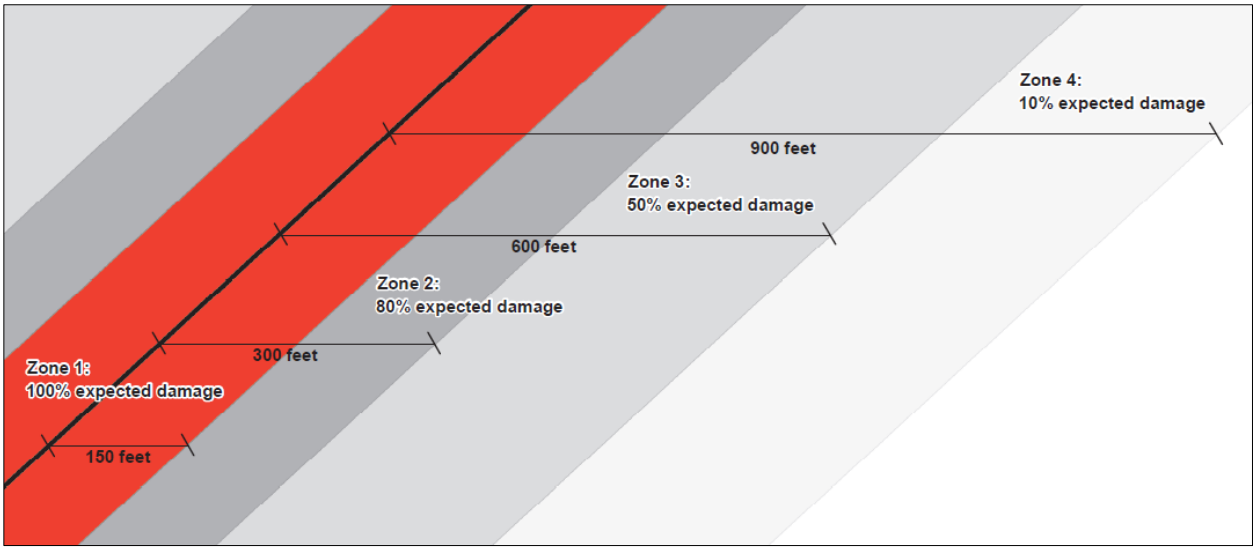
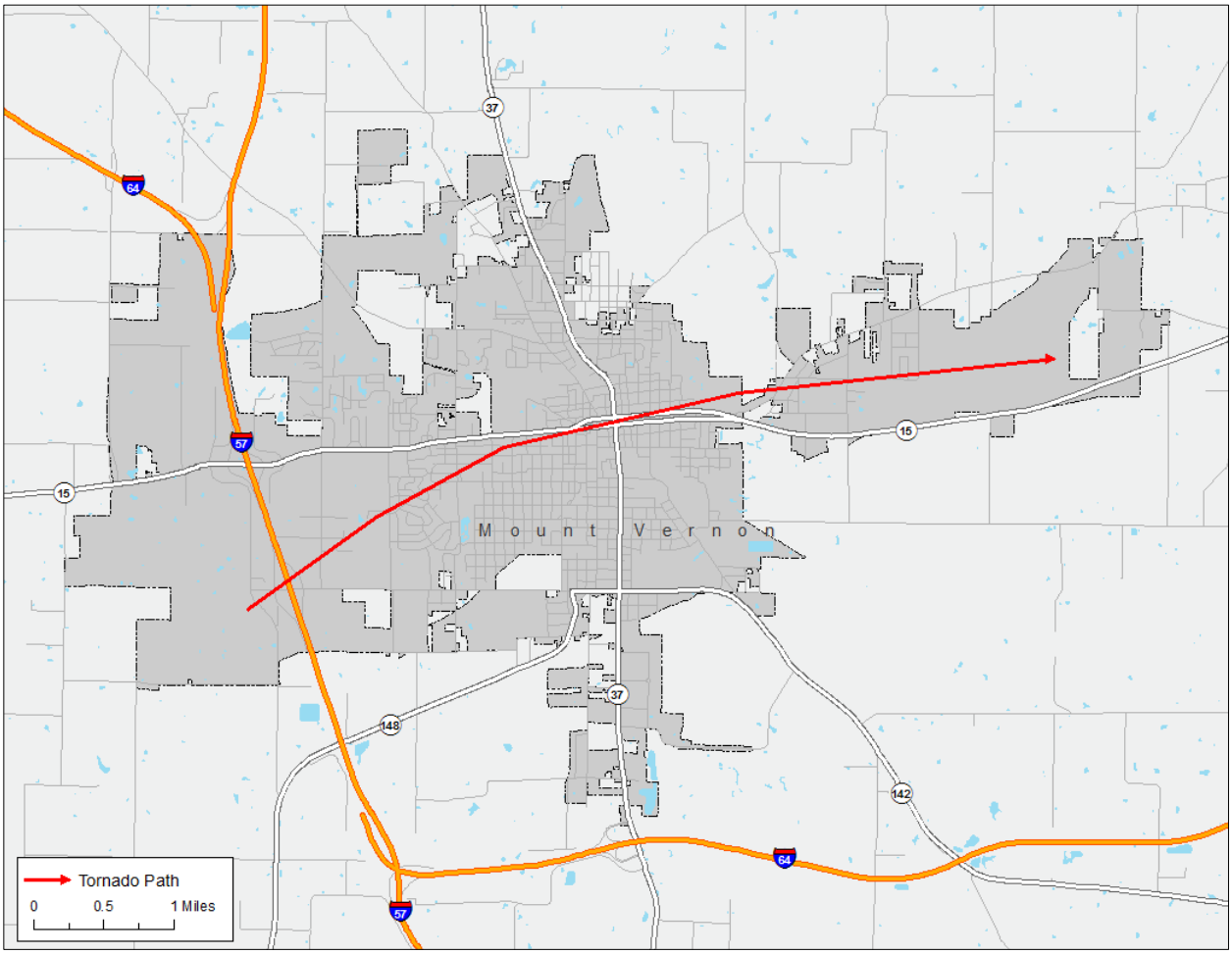


Figure 4-4: Modeled Hypothetical EF4 Tornado Track for Mount Vernon



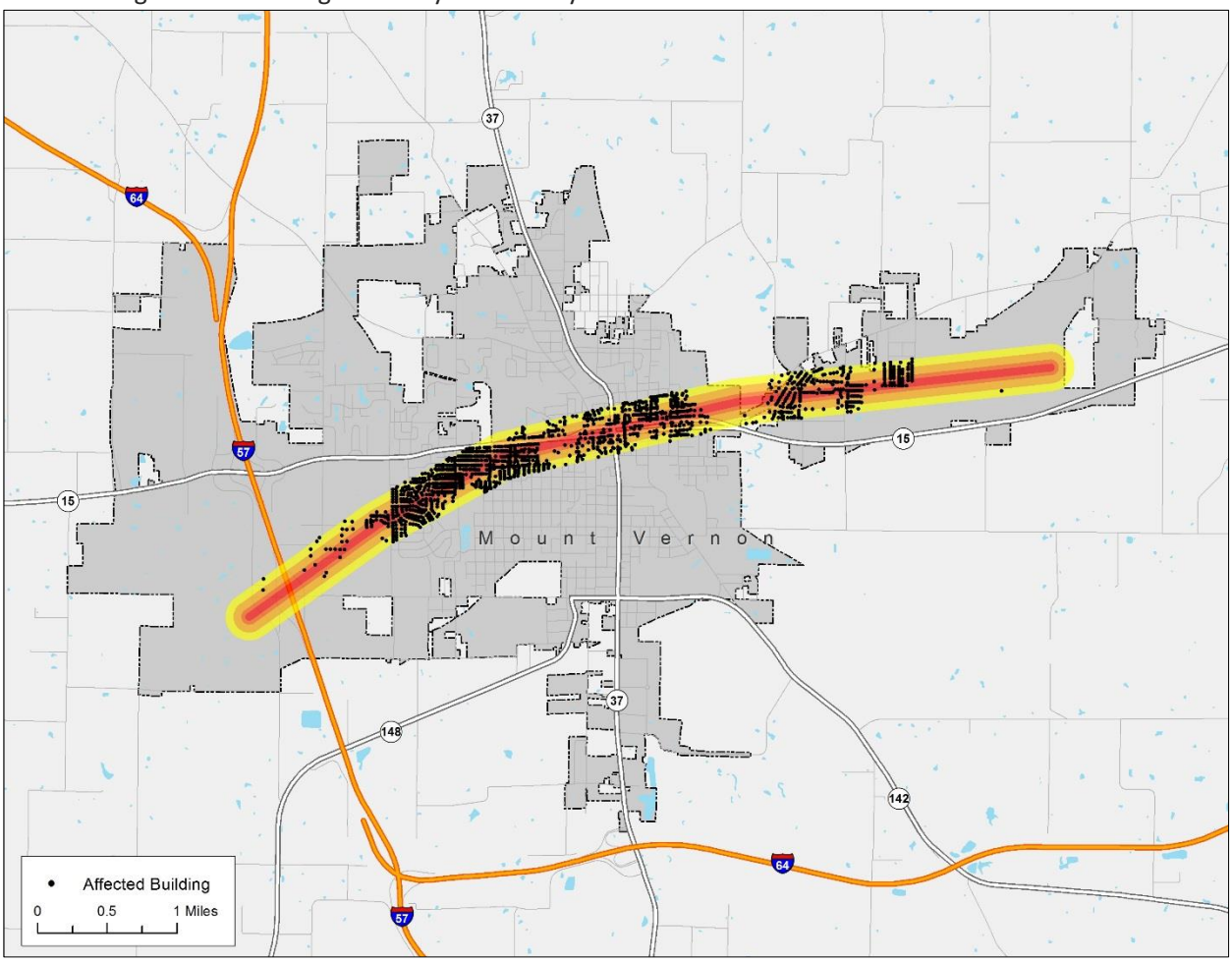
Modeled Impacts of the EF4 Tornado

The GIS analysis estimates that the modeled EF4 tornado would damage 1,432 buildings. The estimated building losses are over $114,906,660. The building losses are an estimate of building replacement costs multiplied by the damage percent. Table 4-14 and Figure 4-5 show the results of the EF4 tornado analysis.

Table 4-14. Estimated Building Loss by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$16,542,783	$10,907,600	$13,158,716	$2,347,245
Commercial	$16,542,783	$10,907,600	$13,158,716	$2,347,245
Industrial	$0	$544,944	$0	$0
Total:	$39,915,099	$37,417,429	$33,059,735	$4,514,397

Figure 4-5. Building Inventory Affected by the EF4 Tornadoes Modeled for Mount Vernon



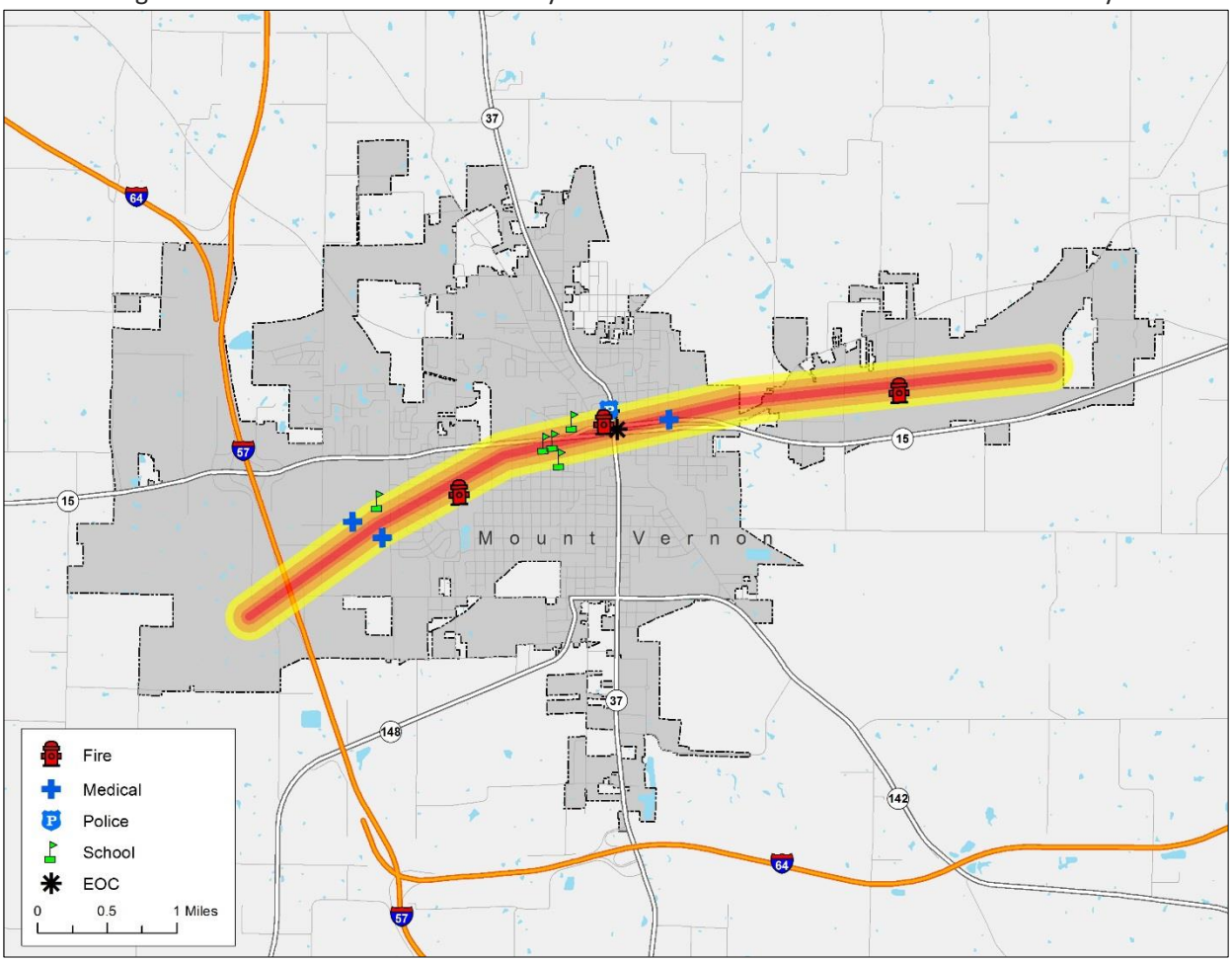
Critical Facilities Damage

There are fourteen critical facility located within 900 feet of the EF4 tornado path in the city of Mount Vernon. The model predicts that seven care facilities, seven schools, two emergency operation centers, two police and four fire stations would experience damage. The affected facilities are identified in Table 4-15, and their geographic locations are shown in Figure 4-6.

Table 4-15: Critical Facilities Affected by the EF4 Tornadoes Modeled for Jefferson County

Critical Facility	Facility Name
Emergency Operations Centers	Jefferson County Sheriff's Office
	Jefferson County Courthouse
	Mount Vernon Police Department EOC
Police Station	Mt. Vernon Police Department
Fire Departments	Mt. Vernon City Fire Station 1
	Mt. Vernon City Fire Station 2
	Mt. Vernon City Fire Station 3
Medical Care	Nature Trail Healthcare Center
	DaVita Dialysis
	Countryside Manor
Schools	J. L. Buford Intermediate Education Center
	St. Mary Elementary School
	Victory Christian Academy
	Zadok Casey Middle School
	Dr. Andy Hall Childhood Center

Figure 4-6. Critical Facilities Affected by the EF4 Tornadoes Modeled for Jefferson County



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and all buildings are at risk because tornadoes can occur anywhere within the state, at any time. Furthermore, any future development in terms of new construction within the county is at risk. Table 4-8 includes the building exposure for Jefferson County. All essential facilities in the county are at risk. Appendix E include a list of the essential facilities in Jefferson County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Suggestions for Community Development Trends

Preparing for severe storms will be enhanced if local officials sponsor a wide range of programs and initiative to address severe storm preparedness. It is suggested that the county should build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. This is particularly import where the future economic expansion is expected to take place in the city of Mount Vernon near the I-57 / I-64 Interchange and along the Route 15. Additional warning sirens can warn the community of approaching storms to ensure the safety of Jefferson County residents and minimizing property damage.

4.3.3 Hazardous Material Storage and Transportation Hazard

Hazard Definition

Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances across county and state lines every day. Transporting chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce, meaning transportation of fertilizers, herbicides, and pesticides is common on rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion, which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences of Hazardous Materials Storage and Transportation Hazard

Jefferson County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries. Minor releases have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Jefferson County residents.

Geographic Location of Hazardous Materials Storage and Transportation Hazard

Hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent of Hazardous Materials Storage and Transportation Hazard

The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification of Hazardous Materials Storage and Transportation Hazard

Based on input from the Planning Team, future occurrence of hazardous materials accident in Jefferson County is likely. According to the Risk Priority Index (RPI) and County input, hazardous material release is ranked as the number two hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
4	x	2	=	8

Vulnerability Analysis for Hazardous Materials Storage and Transportation Hazard

The entire county is vulnerable to a hazardous material release and can expect impacts within the affected area. The main concern during a release or spill is the affected population. This plan will therefore consider all buildings located within the county as vulnerable. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g., a damaged police station can no longer serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris, and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

During a hazardous material release, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that a hazardous materials release could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could become impassable causing risk to motorists.

ALOHA Hazardous Chemical Release Analysis

The U.S. Environmental Protection Agency's ALOHA (Areal Locations of Hazardous Atmospheres) model was used to assess the impacted area for ammonia release at intersection of Interstate-57 and Route 15 in Mount Vernon. The Jefferson County Planning Team selected the ammonia scenario because of significant truck traffic along major transportation routes within a relatively densely populated area.

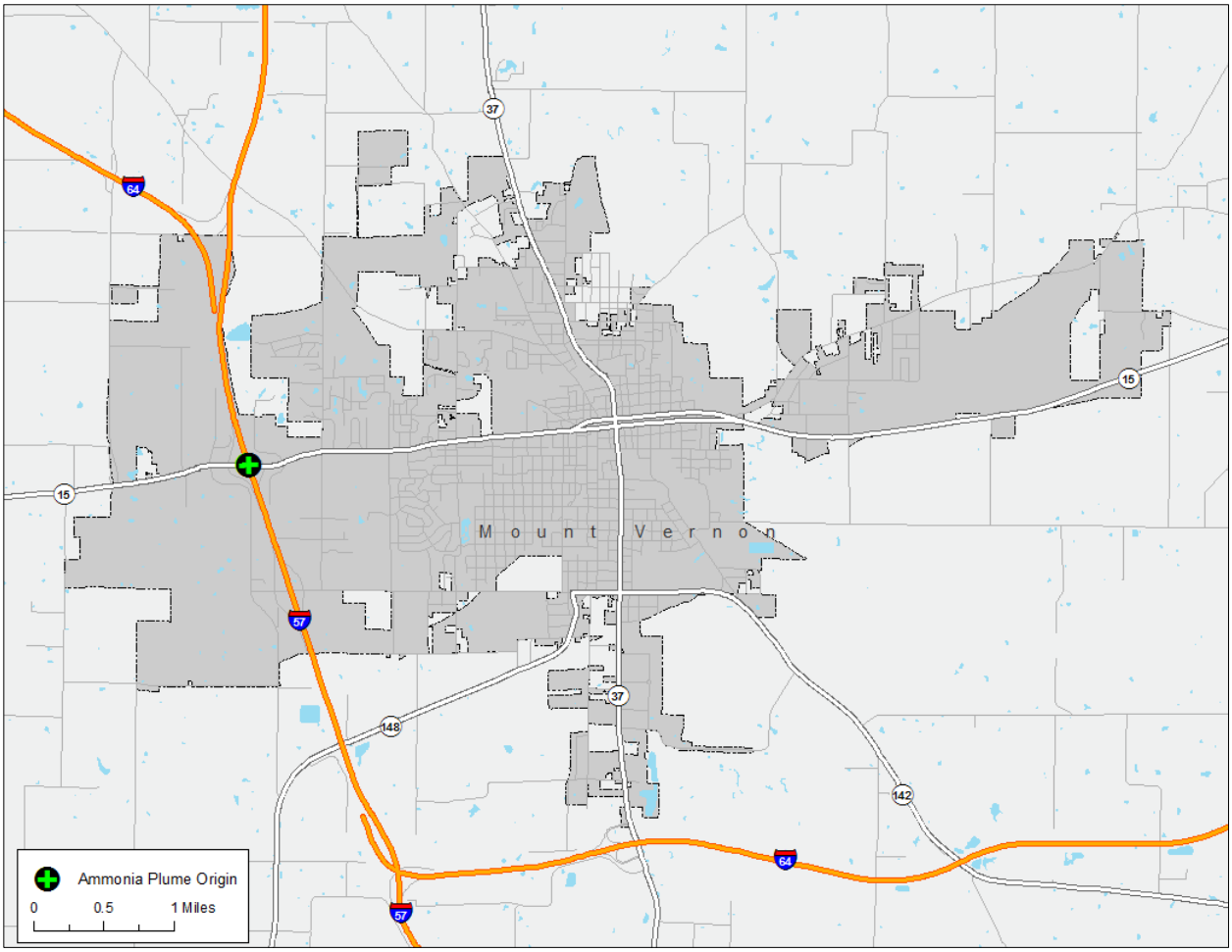
ALOHA is a computer program designed for response to chemical accidents, as well as emergency planning and training. Chlorine, ammonia, and propane are common chemicals used in industrial operations and

are found in either liquid or gas form. Rail and truck tankers haul chlorine, ammonia, and propane to and from facilities.

Ammonia is a clear colorless gas with a strong odor. Ammonia is shipped as a liquid under its own vapor pressure. The density of liquid ammonia is 6 lb/gal. Contact with the unconfined liquid can cause frostbite. Gas is generally regarded as nonflammable but does burn within certain vapor concentration limits and with strong ignition. Fire hazard increases in the presence of oil or other combustible materials. Although gas is lighter than air, vapors from a leak initially hug the ground. Prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation of high concentrations have adverse health effects. Used as a fertilizer, as a refrigerant, and in the manufacture of other chemicals (NOAA Reactivity, 2007).
Source: http://cameochemicals.noaa.gov/chemical/4860

For the ammonia scenario, SIU assumed average atmospheric and climatic conditions for the fall season with a breeze from the west. SIU considered the seasonal conditions upon the request of the Planning Team and obtained average monthly conditions for the City of Mount Vernon from NOAA's Monthly Weather Summary. Figures 4-7 depicts the plume origin of the modeled hazardous chemical release in Jefferson County. The ALOHA atmospheric modeling parameters for the ammonia release, depicted in Figure 4-8, were based upon a west wind speed of 7 miles per hour. The temperature was 50°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of November reported from NOAA for wind direction, wind speed, and temperature to simulate fall conditions.

Figure 4-7: ALOHA Modeled Hazardous Chemical Plume Origin in Jefferson County



The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The ammonia in this tank is in its liquid state. This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 6,470 pounds of material per minute. Figure 4-8 shows the plume modeling parameters in greater detail.

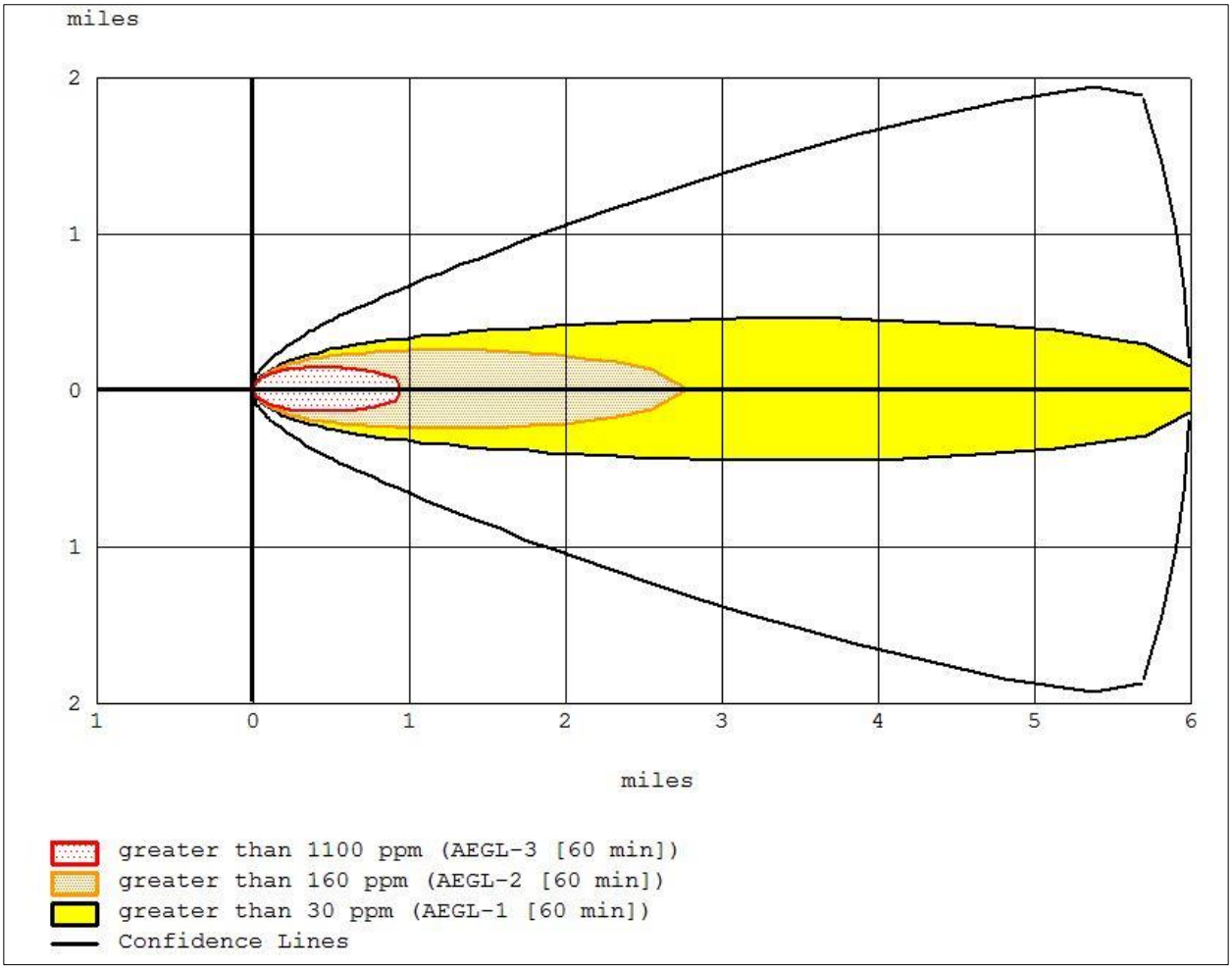
Figure 4-8: ALOHA Modeling Parameters for Ammonia Release

```
SITE DATA:
  Location: MT. VERNON, ILLINOIS
  Building Air Exchanges Per Hour: 0.58 (sheltered single storied)
  Time: November 12, 2014  1425 hours CST (user specified)

CHEMICAL DATA:
  Chemical Name: AMMONIA                  Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm
  Ambient Boiling Point: -28.7° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 7 miles/hour from W at 10 feet
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 50° F                  Stability Class: C
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Flammable chemical escaping from tank (not burning)
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 50° F
  Chemical Mass in Tank: 24.3 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 12 minutes
  Max Average Sustained Release Rate: 6,470 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 45,036 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
  Model Run: Heavy Gas
  Red    : 1643 yards --- (1100 ppm = AEGL-3 [60 min])
  Orange: 2.8 miles --- (160 ppm = AEGL-2 [60 min])
  Yellow: greater than 6 miles --- (30 ppm = AEGL-1 [60 min])
```

Using the parameters in Figure 4-8, approximately 45,036 pounds of material. The image in Figure 4-9 depicts the plume footprint generated by ALOHA. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million.

The red buffer (1100 ppm) extends no more than 1 mile from the point of release after one hour. The orange buffer (160 ppm) extends no more than 2.8 miles from the point of relase. The yellow buffer (30 ppm) extends greater than six miles from the point of release. The dashed line depicts the level of confidence within the confines of the entire plume footprint. The ALOHA model is 95% confident that the release will stay within this boundary.

Figure 4-9: ALOHA Generate Plume Footprint of Ammonia Scenario



Acute Exposure Guideline Levels (AEGL) are intended to describe the risk to humans resulting from once-in-a-lifetime, or rare exposure to airborne chemical (U.S. EPA AEGL Program). The National Advisory Committee for the Development of Acute Exposure Guideline Levels for Hazardous Substances (AEGL Committee) is involved in developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills, or other catastrophic exposures. AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. The three AEGLs have been defined as follows:

> AEGL-1: the airborne concentration, expressed as parts per million or milligrams per cubic meter (ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
>
> AEGL-2: the airborne concentration (expressed as ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3: the airborne concentration (expressed as ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Airborne concentrations below the AEGL-1 represent exposure levels that can produce mild and progressively increasing but transient and non-disabling odor, taste, and sensory irritation or certain asymptomatic, non-sensory effects. With increasing airborne concentrations above each AEGL, there is a progressive increase in the likelihood of occurrence and the severity of effects described for each corresponding AEGL. Although the AEGL values represent threshold levels for the general public, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses, it is recognized that individuals, subject to unique or idiosyncratic responses, could experience the effects described at concentrations below the corresponding AEGL.

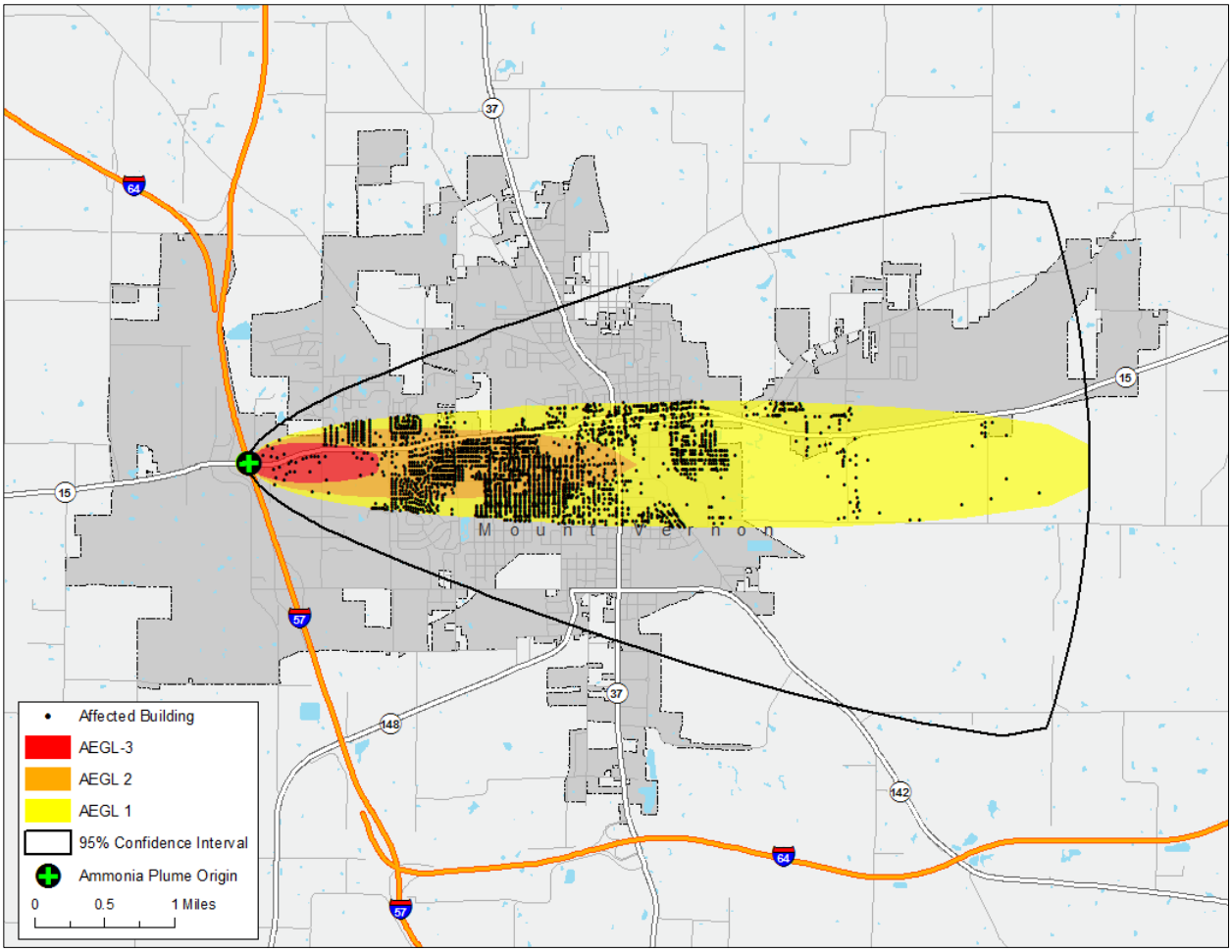
Results for Ammonia Release

An estimate of property exposed to the ammonia spill was calculated by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 1100 ppm, AEGL 2: ≥ 160 ppm and AEGL 1: ≥ 30 ppm). The Jefferson County assessment and parcel data was utilized for this analysis. There are 2,572 building within the ammonia plume. It should be noted that the results should be interpreted as potential degrees of loss rather than exact number of buildings damaged to the ammonia release. Table 4-16 lists the total amount of building exposure to each AEGL zone. Figure 4-10 depicts the ammonia spill footprint and location of the buildings exposed. The GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume is approximately $195 million.

Table 4-16: Estimated Building Exposure as a Result of the Ammonia Release

	Building Exposure			Number of Buildings		
Occupancy	**AEGL 1**	**AEGL 2**	**AEGL 3**	**AEGL 1**	**AEGL 2**	**AEGL3**
Residential	$32,837,325	$40,496,652	$0	1045	1029	0
Commercial	$53,215,869	$33,338,121	$30,910,227	335	118	36
Industrial	$3,493,059	$231,978	$0	8	1	0
Total:	**$89,546,253**	**$74,066,751**	**$30,910,227**	**1388**	**1148**	**36**

Figure 4-10: ALOHA Plume Footprint and Buildings Exposed to Ammonia Release



Critical Facilities Damage

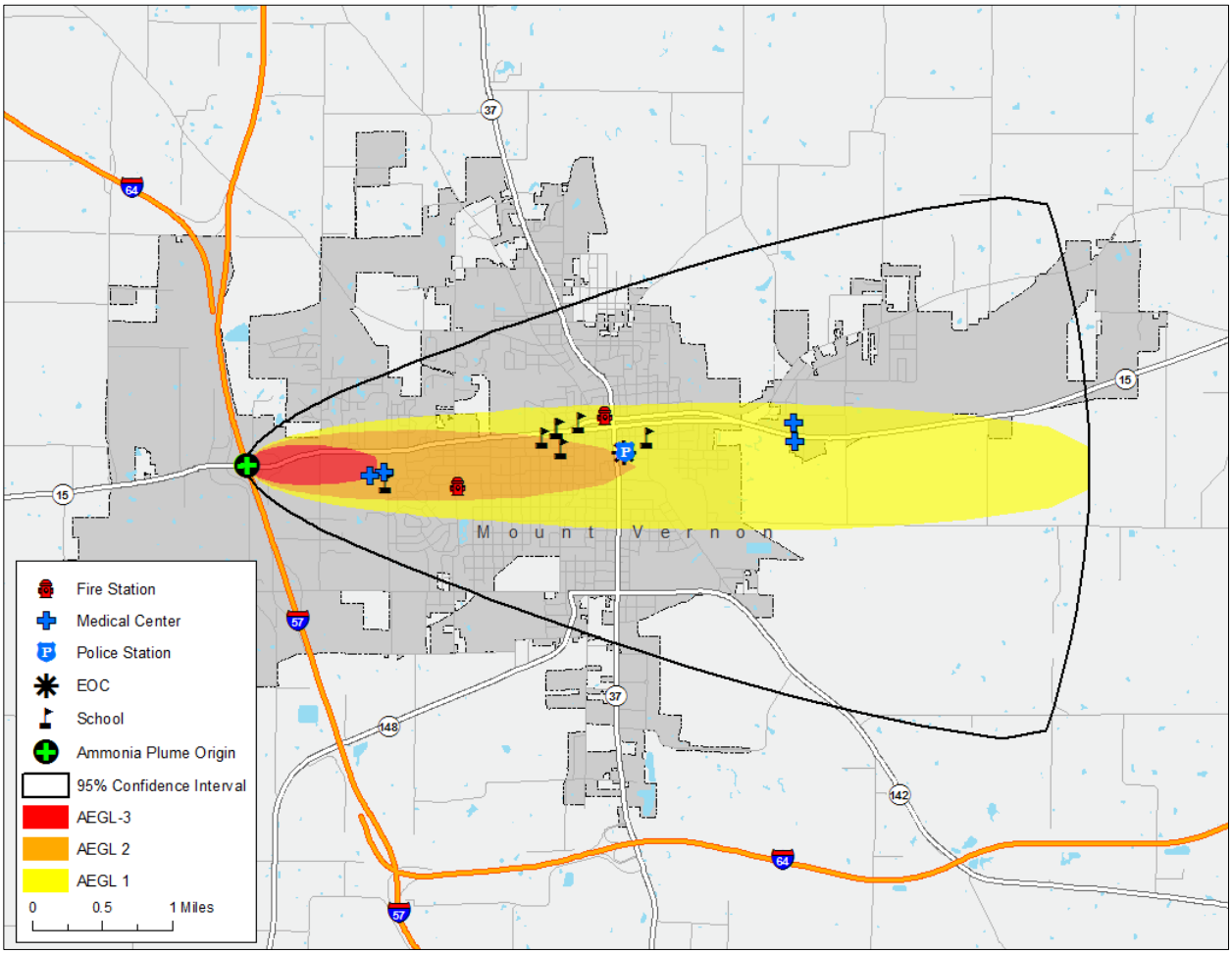
There are 14 critical facilities within the limits of the ammonia scenario. Most are located outside the confines of the >1100 ppm concentration level. Table 4-17 and Figure 4-11 identifies the affected facilities.

Table 4-17: Critical Facilities within the Ammonia Plume Footprint

Critical Facility	Facility Name
Care Facilities	Crossroads Community Hospital
	Mount Vernon Health Care
	Countryside Manor
	Jefferson County Health Department
Schools	J. L. Buford Intermediate Education Center
	St. Mary's Parochial School
	Victory Christian Academy
	Zadok Casey Middle School
	Dr. Andy Hall Childhood Center
	Mount Vernon High School
EOC Facility	Jefferson County Courthouse

Critical Facility	Facility Name
Fire Departments	Mt. Vernon City Fire Station #1
	Mt. Vernon City Fire Station #2
Police Departments	Jefferson County Sherriff

Figure 4-11: Map of Critical Facilities within the Ammonia Plume Footprint



Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transportation Hazard

Jefferson County is expect to see future economic expansion near the city of Mount Vernon near the I-57 – I-64 Interchange and along the Route 15. These areas are particularly vulnerable to chemical releases because of transportation of hazardous materials.

Suggestion for Community Development Trends

Because the hazardous material hazard events may occur anywhere within the county, future development is impacted. The major transportation routes and the industries located in Jefferson County pose a threat of dangerous chemicals and hazardous materials release.

4.3.4 Earthquake Hazard

Hazard Definition

An earthquake is the shaking of the earth caused by the energy released when large blocks of rock slip past each other in the earth's crust. Most earthquakes occur at tectonic plate boundaries; however, some earthquakes occur in the middle of plates, for example the New Madrid Seismic Zone or the Wabash Valley Fault System. Both of these seismic areas have a geologic history of strong quakes, and an earthquake from either seismic area could possibly affect Illinois counties. There may be other, currently unidentified faults in the Midwest also capable of producing strong earthquakes.

Strong earthquakes can collapse buildings and infrastructure, disrupt utilities, and trigger landslides, avalanches, flash floods, fires, and tsunamis. When an earthquake occurs in a populated area, it may cause death, injury, and extensive property damage. An earthquake might damage essential facilities, such as fire departments, police departments, and hospitals, disrupting emergency response services in the affected area. Strong earthquakes may also require mass relocation; however, relocation may be impossible in the short-term aftermath of a significant event due to damaged transportation infrastructure and public communication systems.

Earthquakes are usually measured by two criteria: intensity and magnitude (M). Earthquake intensity qualitatively measures the strength of shaking produced by an earthquake at a certain location and is determined from effects on people, structures, and the natural environment. Earthquake magnitude quantitatively measures the energy released at the earthquake's subsurface source in the crust, or epicenter. Magnitude in the earthquake hazard analysis. Table 4-18 provides a comparison of magnitude and intensity, and Table 4-19 provides qualitative descriptions of intensity, for a sense of what a given magnitude might feel like.

Table 4-18: Comparison of Earthquake Magnitude and Intensity

Magnitude (M)	Typical Maximum Modified Mercalli Intensity
1.0 – 3.0	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 and higher	VIII or higher

Table 4-19: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	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 motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.

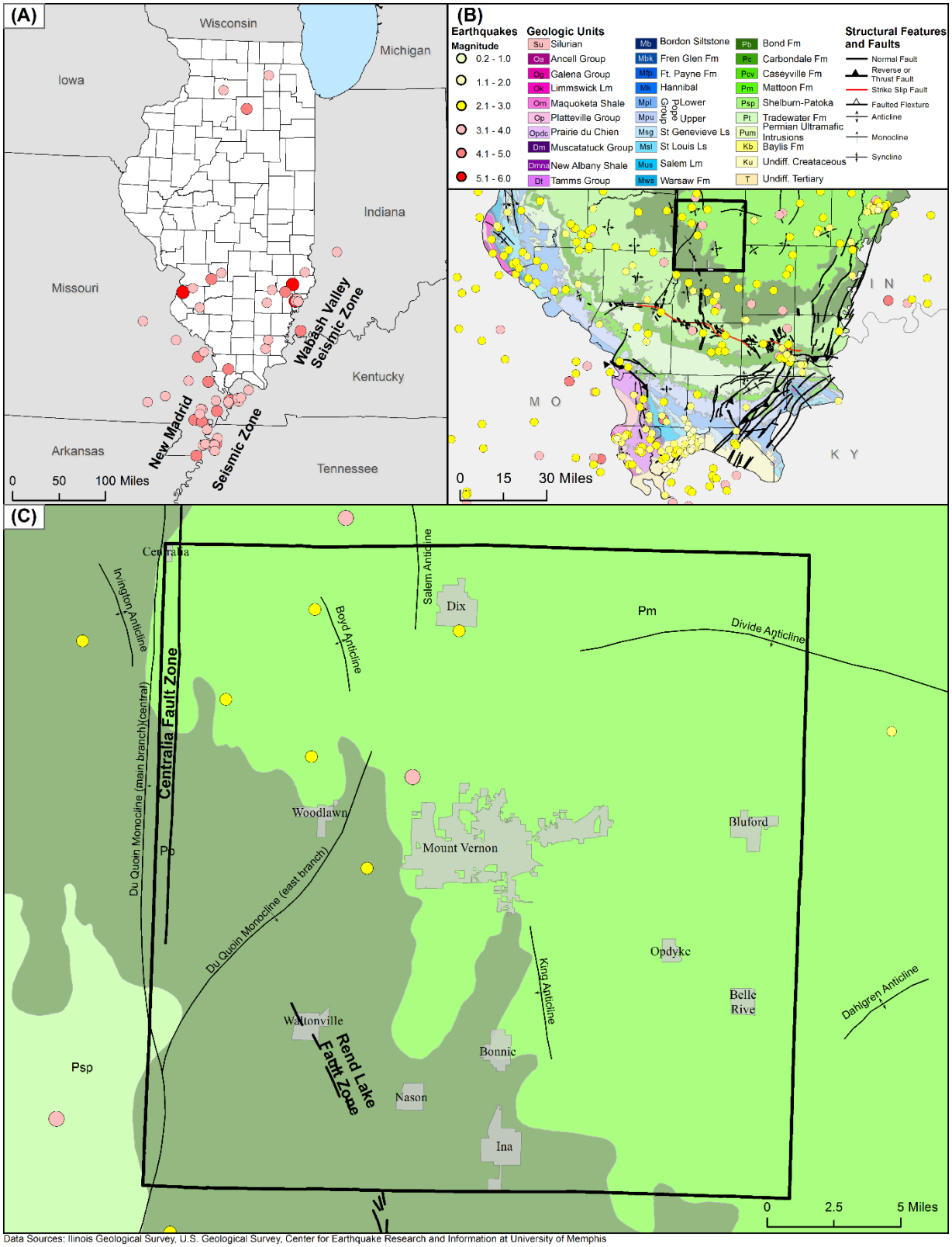
Mercalli Intensity	Description
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	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, and walls. Heavy furniture overturned.
IX	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	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Previous Occurrences for Earthquakes

Historically, the most significant seismic activity in Illinois is associated with New Madrid Seismic Zone. The New Madrid Seismic Zone produced three large earthquakes in the central U.S. with magnitudes estimated between 7.0 and 7.7 on December 16, 1811, January 23, 1812, and February 7, 1812. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment (sand blows) over an area >10,500 km^2, and uplifted a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historic earthquake). The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811-1812 type earthquakes (M7.5-8.0) is 7%-10% over the next 50 years (USGS Fact Sheet 2006-3125).

Earthquakes measured in Illinois typically vary in magnitude from very low microseismic events of M=1-3 to larger events up to M=5.4. Figure 4-12 depicts the following: (A) location of notable earthquakes in Illinois region; (B) generalized geologic bedrock map with earthquake epicenters and geologic structures; (C) geologic and earthquake epicenter map of Jefferson County. The most recent earthquake in Illinois—as of the date of this report—was a M2.3 event in February 2014, approximately 6 miles NNW of Mound City in Pulaski County. The last earthquake in Illinois to cause minor damage occurred on April 18, 2008 near Mt. Carmel, IL and measured 5.2 in magnitude. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years and are historically concentrated in southern Illinois.

Figure 4-12. Notable Earthquakes in Illinois with Geologic and Earthquake Epicenters in Jefferson County

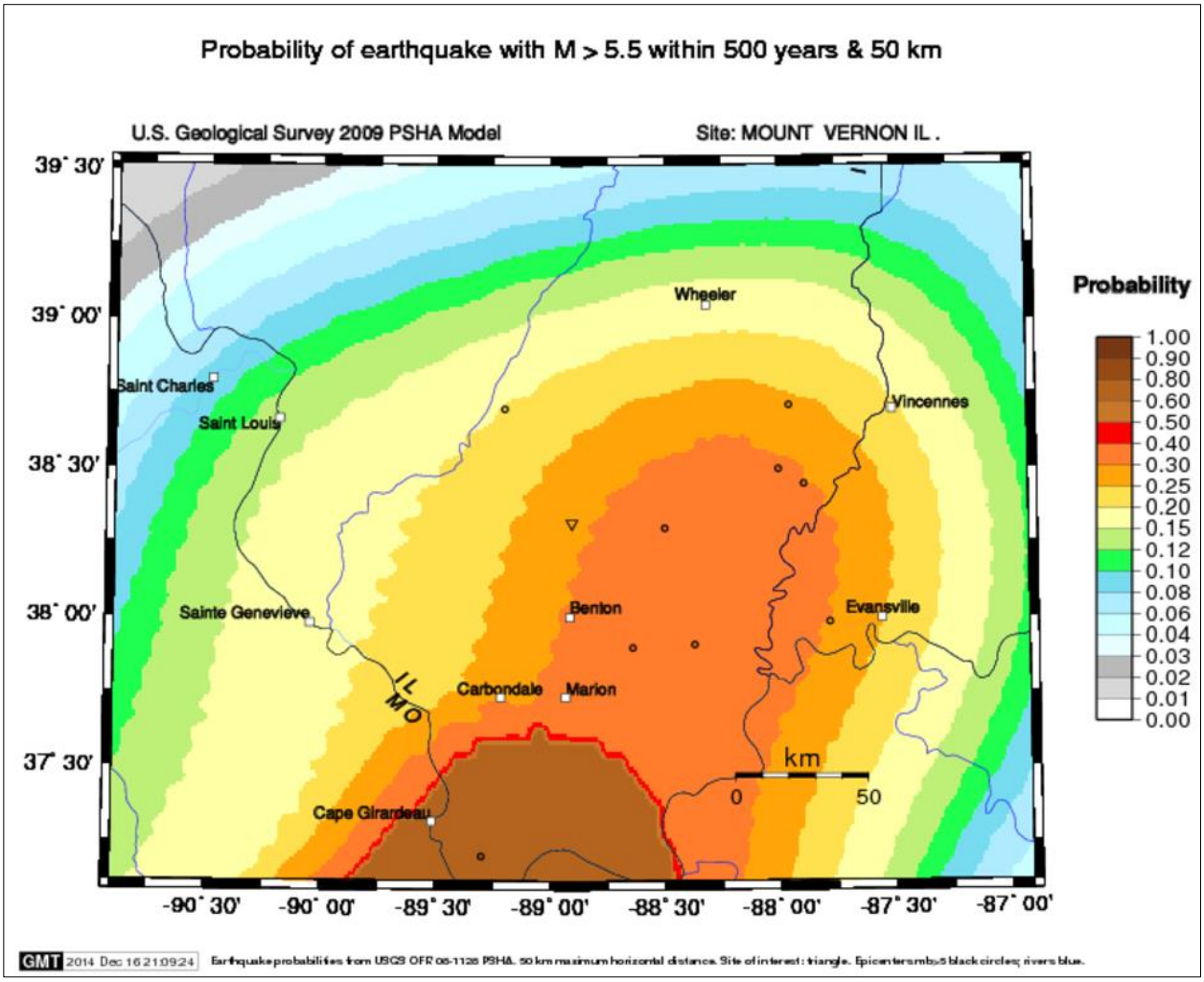


Data Sources: Ilinois Geological Survey, U.S. Geological Survey, Center for Earthquake Research and Information at University of Memphis

Geographic Location for Earthquake Hazard

Jefferson County is situated in a region susceptible to earthquakes. The two most significant zones of seismic activity in Illinois are the New Madrid Seismic Zone and the Wabash Valley Fault System. Since 1974, the epicenters of seven small earthquakes (M2.1-M3.2) have been recorded in Jefferson County (see Figure 4-12(C)). The local seismic activity has been focused in the north and western portions of the county in proximity of the Centralia Fault Zone and Rend lake Fault System. The seismogenic potential of these structures is unknown, and the geologic mechanism related to the minor earthquakes is poorly understood. While large earthquakes (>M7.0) experienced during the New Madrid Events of 1811 and 1812 are unlikely in Jefferson County, moderate earthquakes (≤ 6.0M) in or in the vicinity of Jefferson County are probable. The USGS estimates the probability of a moderate M5.5 earthquake occurring in Jefferson County within the next 500-years at approximately 2.5% (see Figure 4-13).

Figure 4-13. Probability of M5.5 Earthquake occurring in Jefferson County within the next 500 years



Hazard Extent for Earthquake Hazard

Earthquake effects are possible anywhere in Jefferson County. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. The National

Earthquake Hazards Reduction Program (NEHRP) compliant soils map was provided by FEMA for the analysis. This map identifies the soils most susceptible to failure.

Risk Identification for Earthquake Hazard

Based on historical information and current USGS and SIU research and studies, future earthquakes in Jefferson County are possible, but large (>M7.0) earthquakes that cause catastrophic damage are unlikely. According to the Jefferson County Planning Team's assessment, earthquakes are ranked as the number three hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
2	x	4	=	8

Vulnerability Analysis for Earthquake Hazard

Earthquakes could impact the entire county equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County.

Critical Facilities

All critical facilities are vulnerable to earthquakes. Critical facilities are susceptible to many of the same impacts as any other building within the jurisdiction. These impacts include structural failure and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g., damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that shaking could impact include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure was not available for use in the earthquake models, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Earthquake Analyses

Existing geological information was reviewed prior to the Planning Team selection of earthquake scenarios. A probabilistic earthquake scenario was performed to provide a reasonable basis for earthquake planning in Jefferson County. The other two scenarios included a Magnitude of 7.7 with the

epicenter located on the New Madrid Fault Zone and a Magnitude 7.1 with the epicenter located on the Wabash Fault Zone.

The earthquake-loss analysis for the probabilistic scenario was based on ground-shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude typical of that expected for a 500-year return period. The New Madrid Fault Zone runs along the Mississippi River through Arkansas, Tennessee, Missouri, Kentucky and Southern Illinois. The Wabash Valley Fault Zone runs through Southeastern Illinois, Western Kentucky and Southwest Indiana. This represents a realistic scenario for planning purposes.

The earthquake hazard modeling scenarios performed:

- Magnitude 5.5 500-year probability event in Jefferson County
- Magnitude 7.7 event along the New Madrid Fault Zone
- Magnitude 7.1 event along the Wabash Valley Fault Zone

This report presents two types of building losses: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for M5.5 500-Year Probabilistic Scenario

The results of the M5.5 500-year probabilistic earthquake scenario are depicted in Tables 4-20, 4-21, and Figure 4-14. Hazus-MH estimates that approximately 1,385 buildings will be at least moderately damaged. This is 7% of the total number of buildings in the Jefferson County. It is estimated that 22 buildings would be damaged beyond repair.

The total economic losses are approximately $67 million dollars. It is estimated that 23% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 53% of the total loss.

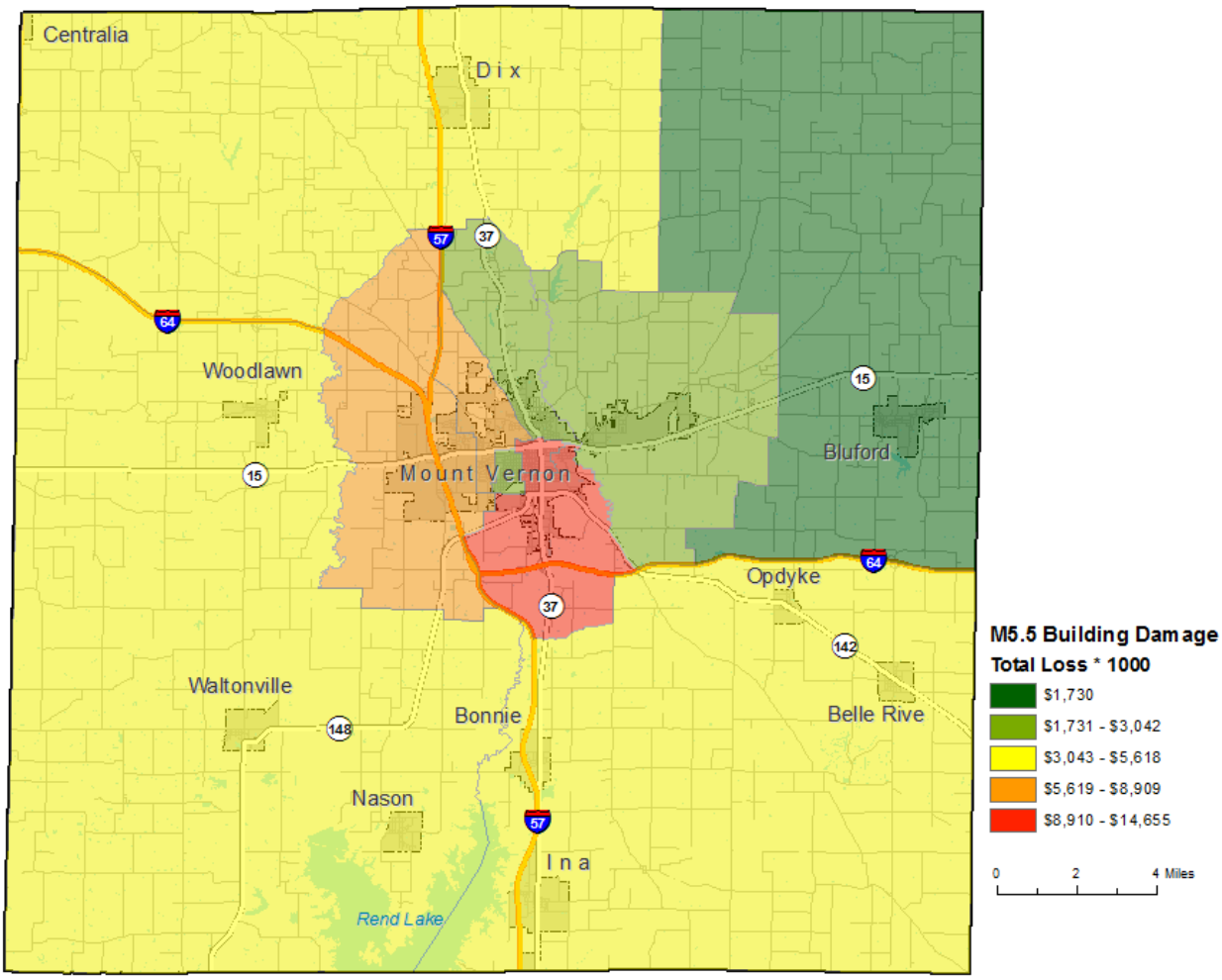
Table 4-20: M5.5 500-Year Probabilistic Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	108	0.71	18	0.66	11	0.94	2	1.21	0	0.86
Commercial	604	3.98	127	4.74	81	7.01	22	10.56	3	11.51
Educational	25	0.16	5	0.19	3	0.29	1	0.39	0	0.57
Government	24	0.16	5	0.18	3	0.27	1	0.33	0	0.50
Industrial	145	28.60	25	0.92	16	1.42	4	2.13	0	1.93
Other Residential	4,340	0.47	907	33.78	508	43.83	85	41.64	7	31.01
Religion	71	64.96	15	0.57	9	0.80	3	1.23	0	1.50
Single Family	9,858		1,583	58.95	527	45.44	87	42.50	12	52.13
Total:	**15,175**		**2,685**		**1,160**		**205**		**22**	

Table 4-21: M5.5 500-Year Probabilistic Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.11	2.70	0.12	0.20	3.13
	Capital-Related	0.00	0.05	2.03	0.07	0.06	2.21
	Rental	0.72	0.55	1.38	0.04	0.10	2.79
	Relocation	2.68	0.92	2.33	0.20	0.88	7.01
	Subtotal:	**3.40**	**1.63**	**8.44**	**0.43**	**1.24**	**15.14**
Capital Stock Losses	Structural	3.94	1.36	2.67	0.50	0.87	9.34
	Non-Structural	13.68	5.46	7.02	1.44	2.43	30.03
	Content	4.48	1.33	3.96	0.99	1.38	12.14
	Inventory	0.00	0.00	0.13	0.23	0.02	0.38
	Subtotal:	**22.10**	**8.15**	**13.78**	**3.16**	**4.7**	**51.89**
	Total:	**25.5**	**9.78**	**22.22**	**3.59**	**5.94**	**67.03**

Figure 4-14. Jefferson County M5.5 500-Year Probabilistic Earthquake Building Economic Losses



Results for M7.7 New Madrid Earthquake

The results of the M7.7 New Madrid earthquake scenario are depicted in Tables 4-22, 4-23, and Figure 4-15. Hazus-MH estimates that approximately 412 buildings will be at least moderately damaged. This is over 2% of the total number of buildings in the Jefferson County. It is estimated that 0 buildings would be damaged beyond repair.

The total economic losses are approximately $32 million dollars. It is estimated that 17% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 48% of the total loss.

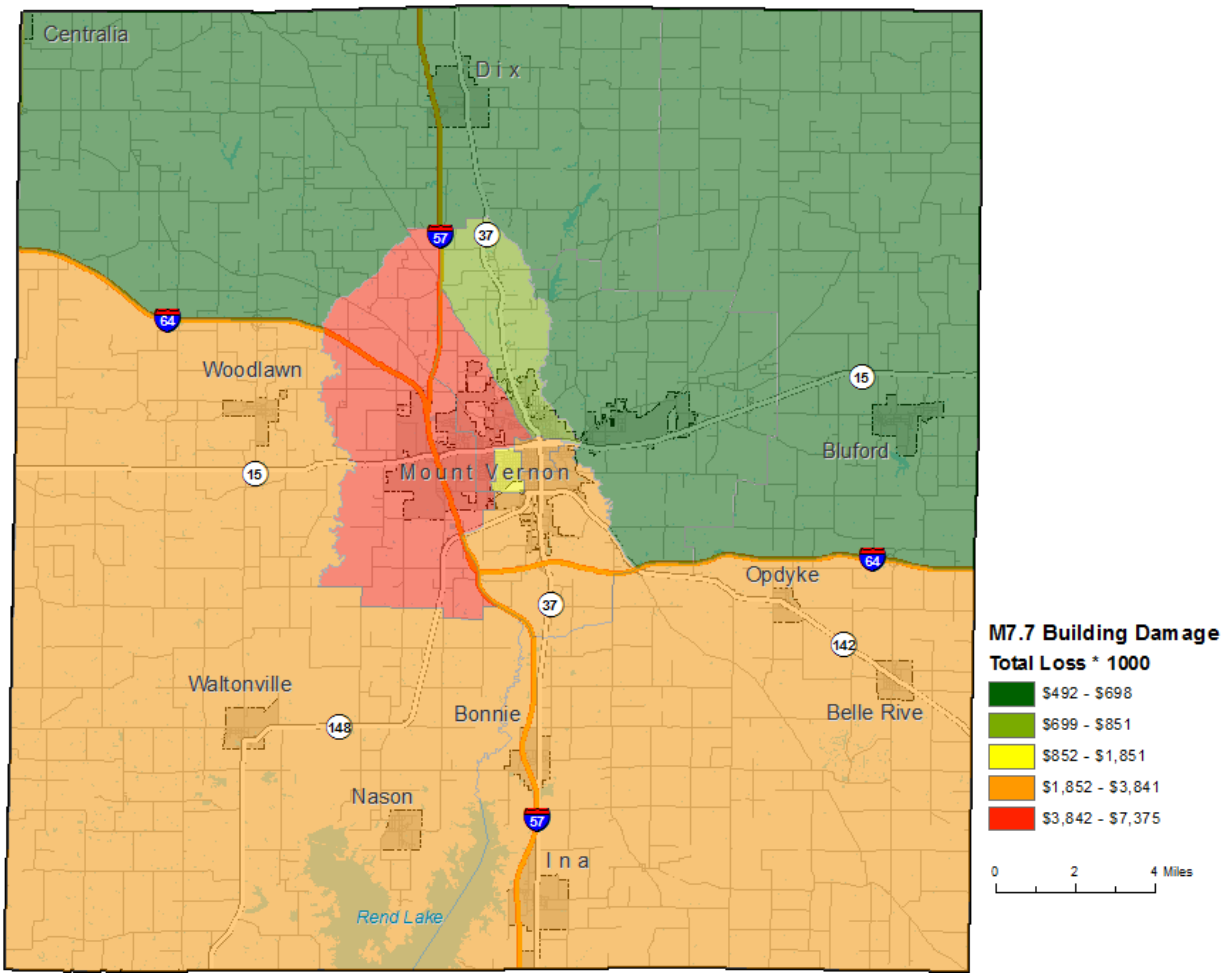
Table 4-22: New Madrid M7.7 Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	113	0.67	19	1.00	7	1.68	0	3.13	0	2.13
Commercial	669	3.94	127	6.77	39	9.76	2	17.88	0	13.67
Educational	28	0.17	5	0.25	1	0.28	0	0.28	0	0.45
Government	27	0.16	5	0.26	1	0.31	0	0.32	0	0.39
Industrial	158	0.93	23	1.26	9	2.14	0	4.51	0	2.63
Other Residential	4,823	28.44	781	41.76	238	59.23	5	46.99	0	16.50
Religion	83	0.49	12	0.64	3	0.81	0	1.30	0	1.44
Single Family	11,061	65.21	899	48.07	104	25.79	3	25.94	0	62.78
Total:	**16,962**		**1,871**		**402**		**10**		**0**	

Table 4-23: New Madrid M7.7 Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.02	1.31	0.04	0.07	1.44
	Capital-Related	0.00	0.01	0.91	0.02	0.02	0.96
	Rental	0.12	0.16	0.57	0.02	0.02	0.89
	Relocation	0.38	0.33	0.96	0.07	0.20	1.94
	Subtotal:	**0.5**	**0.52**	**3.75**	**0.15**	**0.31**	**5.23**
Capital Stock Losses	Structural	0.86	0.56	0.98	0.17	0.24	2.81
	Non-Structural	5.72	3.00	4.22	0.83	1.14	14.91
	Content	3.15	0.97	2.88	0.58	0.87	8.45
	Inventory	0.00	0.00	0.08	0.13	0.02	0.23
	Subtotal:	**9.73**	**4.53**	**8.16**	**1.71**	**2.27**	**26.4**
	Total:	**10.23**	**5.05**	**11.91**	**1.86**	**2.58**	**31.63**

Figure 4-15. New Madrid M7.7 Earthquake Building Economic Losses



Results M7.1 Magnitude Wabash Valley Earthquake – General Building Stock

The results of the Wabash Valley M7.1 earthquake scenario are depicted in Tables 4-24, 4-25, and Figure 4-16. Hazus-MH estimates that approximately 43 buildings will be at least moderately damaged. Zero buildings would be damaged beyond repair.

The total economic losses are approximately $10 million dollars. It is estimated that 2% of the losses are related to the business interruption of the region. By far, the largest loss is sustained by the residential occupancies which make up over 56% of the total loss.

Table 4-24: Wabash Valley 7.1 Magnitude Earthquake Damage Estimates by Building Occupancy

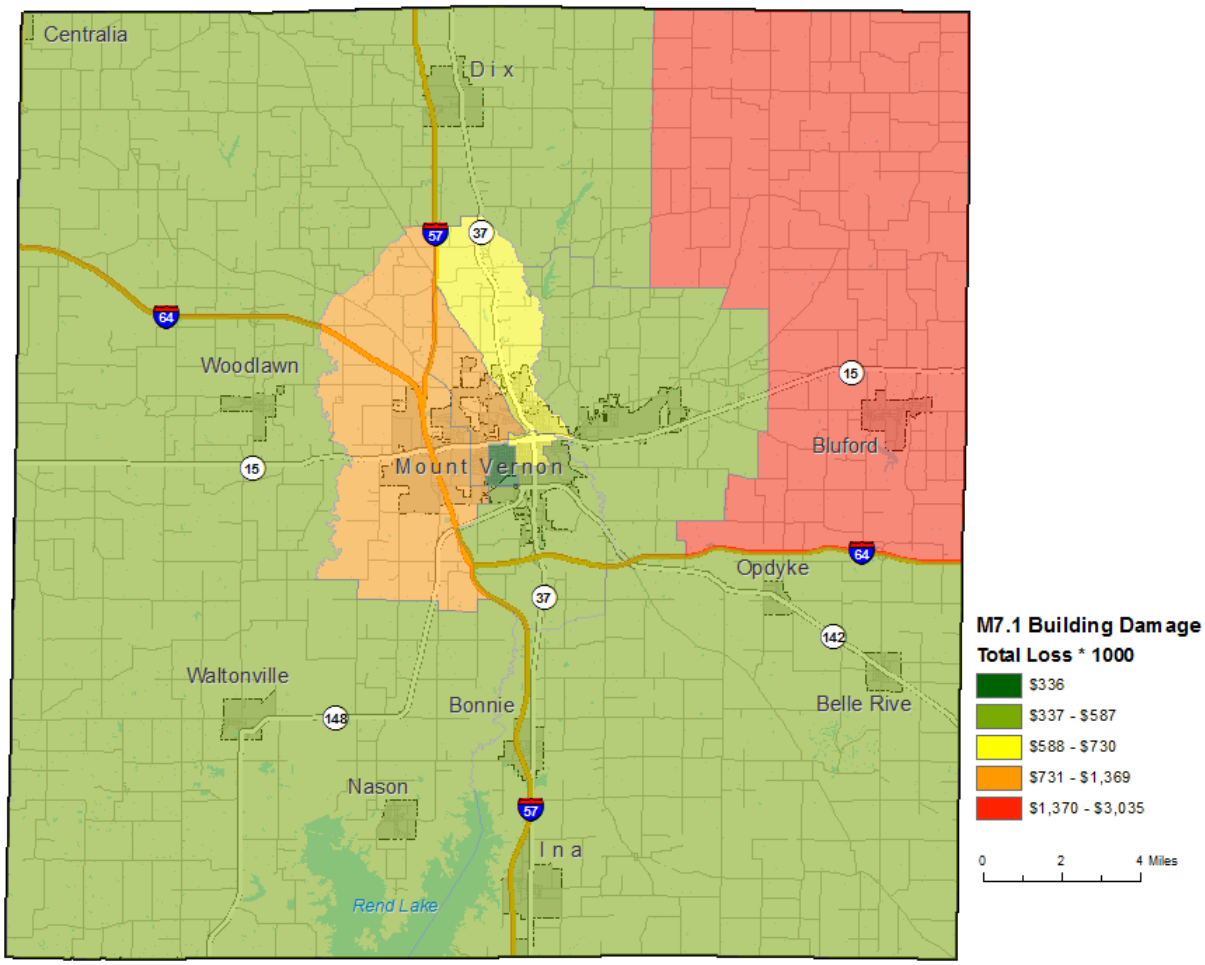
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	136	0.72	3	0.93	1	1.52	0	2.98	0	1.49
Commercial	829	4.38	7	2.41	1	2.63	0	3.91	0	2.34
Educational	33	0.18	1	0.20	0	0.25	0	0.42	0	0.58
Government	33	0.17	0	0.12	0	0.13	0	0.20	0	0.23
Industrial	188	0.99	3	0.91	1	1.34	0	2.47	0	1.12
Other Residential	5,673	30.01	149	49.03	26	61.55	0	38.57	0	16.84
Religion	96	0.51	2	0.52	0	0.63	0	1.15	0	1.12

Single Family	11,914	63.04	139	45.87	14	31.95	0	50.30	0	76.27
Total:	**18,902**		**304**		**43**		**0**		**0**	

Table 4-25: Wabash 7.1 Magnitude Earthquake Estimates of Building Economic Losses (in Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.00	0.01	0.00	0.01	0.02
	Capital-Related	0.00	0.00	0.01	0.00	0.00	0.01
	Rental	0.02	0.01	0.01	0.00	0.00	0.04
	Relocation	0.05	0.03	0.01	0.00	0.03	0.12
	Subtotal:	**0.07**	**0.04**	**0.04**	**0.00**	**0.04**	**0.19**
Capital Stock Losses	Structural	0.13	0.04	0.02	0.01	0.04	0.24
	Non-Structural	2.49	0.84	1.21	0.37	0.62	5.53
	Content	1.72	0.36	1.07	0.27	0.60	4.02
	Inventory	0.00	0.00	0.03	0.06	0.01	0.1
	Subtotal:	**4.34**	**1.24**	**2.33**	**0.71**	**1.27**	**9.89**
	Total:	**4.41**	**1.28**	**2.37**	**0.71**	**1.31**	**10.08**

Figure 4-16. Wabash Valley M7.1 Scenario Building Economic Losses



Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, should accommodate earthquake mitigation design standards.

Suggestions for Community Development Trends

Community development should occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction. It is important to harden and protect future and existing structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication.

4.3.5 Flooding Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the magnitude and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods are classified as one of two types in this plan: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause severe damage over relatively localized areas. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can result from inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Previous Occurrences of Flooding

The NCDC database reported 30 flooding events in Jefferson County. The most recent recorded event was in April 2014 when thunderstorms intensified within a zone of strong southerly low level winds that provided abundant warmth and moisture. The strong moisture feed contributed to torrential downpours that produced flash flooding in a number of counties. A trained spotter in Jefferson County reported flash flooding after 2.3 inches of rain fell. Table 4-26 identifies NCDC-recorded flooding events that caused damage, death, or injury in Jefferson County.

Table 4-26: NCDC-recorded Flooding Events that caused Death, Damage or Injury in Jefferson County

Location or County*	Date	Deaths	Injuries	Property Damage
Dix	3/18/2008	2	0	$58,000
Shirley	4/19/2009	0	0	$10,000
Dix	7/2/2013	0	0	$10,000
Mount Vernon	4/28/1996	0	0	$20,000
Jefferson County	3/1/1997	0	0	$20,000
Spring Garden	5/1/2011	0	0	$30,000
Jefferson County	3/12/2006	0	0	$30,000
Mount Vernon	7/14/1997	0	0	$5,000
	Total:	**2**	**0**	**$183,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the market value of the structure at the time of each flood loss. The Illinois Emergency Management Agency and Illinois Department of Natural Resources was contacted to determine the location of repetitive loss structures in Jefferson County. Records indicate that there are no repetitive loss structures within the county.

Geographic Location of Flooding

Most riverine flooding in Illinois occurs during either the spring or summer and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Flash flooding of low-lying areas in Illinois can occur during any time of the year, but tends to be less frequent and more localized between mid-summer and early winter.

The primary sources of river flooding in Jefferson County are the Big Muddy River and it major tributaries, Rayse Creek, Casey Fork, and Seven Mile Creek. Flooding along the Big Muddy River and its major tributaries can inundate areas of Mount Vernon, Bonnie, Ina, and a significant portion of the central portions of the County. These streams can flood major transportation routes such as State Routes 15, 37, 142, and 148. In addition to the Big Muddy River and its tributaries, Fourmile Creek can inundate portions of Bluford.

Flash flooding in Jefferson County typically occurs or is best documented in urban/developed areas. For example, flash flooding on March 12, 2006 resulted in the closure of numerous secondary roads in Mount Vernon and Bluford. Past high intensity rain events in Mount Vernon have also resulted in the flooding of Optimist Park.

The County reported on episode of Dam failure. Waltonville Lake Dam breached on June 26th, 2011 following a torrential rainstorm in the county.

Hazard Extent for Flooding

All floodplains are susceptible to flooding in Jefferson County. The floodplain of concern is for the 100-year flood event which is defined as areas that have a 1% chance of flooding in any given year. However, flooding is dependent on various local factors including, but not limited to, impervious surfaces, amount

of precipitation, river-training structures, etc. The 100-year flood plain covers approximately 13% of Jefferson County

Vulnerability Analysis for Flooding

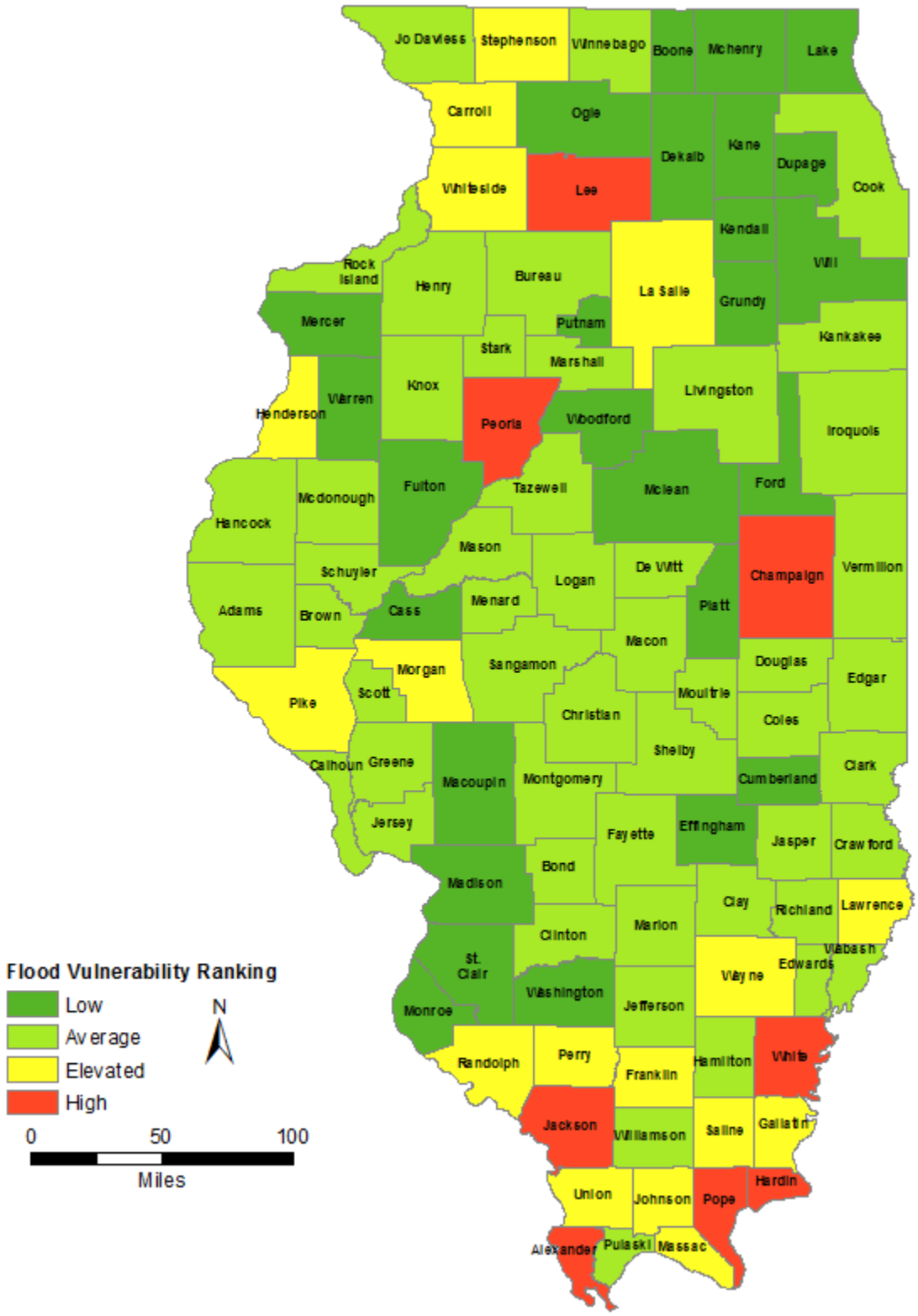
The 2013 Illinois Hazard Mitigation Plan analyzed a variety potential natural hazards including vulnerability to flooding. A Flood Vulnerability Index (FVI) was calculated for all counties and jurisdictions in Illinois. FVI combines Hazus-based estimates of flood exposure and loss with the widely utilized Social Vulnerability Index (SoVI). The highest vulnerability scores and vulnerability ratings were generally in rural counties and communities located along Illinois's large rivers (i.e., Mississippi, Green, Illinois, Kaskaskia, Rock and Ohio Rivers). Figure 4-17 displays the Flood Vulnerability Ratings for the 102 Counties in Illinois. The vulnerability ratings are categorically representations (low, average, elevated, or high) of the flood vulnerability index. Jefferson County has an Average Flood Vulnerability Rating and ranks 53rd out of the 102 Counties in Illinois in terms of loss estimation according to Hazus-MH for floods.

Table 4-27 lists the jurisdictional Flood Vulnerability Ratings for Jefferson County. The jurisdictions of Mount Vernon and Bonnie surpass an average Flood Vulnerability Rating.

Table 4-27 Jurisdictional Flood Vulnerability Ranking for Jefferson County

Jurisdiction	State Ranking	Flood Vulnerability Rating
Mount Vernon	238	Elevated
Bonnie	241	Elevated
Waltonville	259	Average
Ina	262	Average
Bluford	263	Average
Nason	265	Average
Centralia	355	Average

Figure 4-17. County Flood Vulnerability Rating for Illinois



Because all floodplains are susceptible to flooding in Jefferson County; therefore, the population and all buildings located within the floodplain are vulnerable to flooding. To accommodate this risk, this plan considers all buildings located within 100-year flood plain as vulnerable.

Risk Identification for Flood Hazard

Based on historical information and the Flood Vulnerability Rating, future occurrence of flooding in Jefferson County is probable. According to the Risk Priority Index (RPI) and County input, flooding is ranked as the number four hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
2.75	x	2	=	5.5

Critical Facilities

All critical facilities within the floodplain are vulnerable to floods. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendix E include a list of the critical facilities in Jefferson County and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

All buildings within the floodplain are vulnerable to floods. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., damaged home will no longer be habitable, causing residents to seek shelter). This plan considers all buildings located within 100-year flood plain as vulnerable.

Infrastructure

The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Flood Analysis

Hazus-MH was utilized to generate the flood depth grid for a 100-year return period and made calculations by clipping the USGS one-third-arc-second DEM (~10 m) to the flood boundary. Next, Hazus-MH was used to estimate the damages for Jefferson County by utilizing a detailed building inventory database created from assessor and parcel data.

According to this analysis, there are 206 buildings located in the Jefferson County 100-year floodplain. The estimated damage to these structures is $2,779,430. There are 52 tax-exempt structures without an assessed value that fall within the floodplain. These structures were not used in the HAZUS-MH analysis but can still have damage due to flooding. It should be noted that the results should be interpreted as

degrees of loss rather than exact number of buildings exposed to flooding. Figure 4-18 depicts the building inventory within the 100-year floodplain and Table 4-28 shows the loss estimates by occupancy class.

Figure 4-18. Building Inventory Located within the 100-year Floodplain in Jefferson County

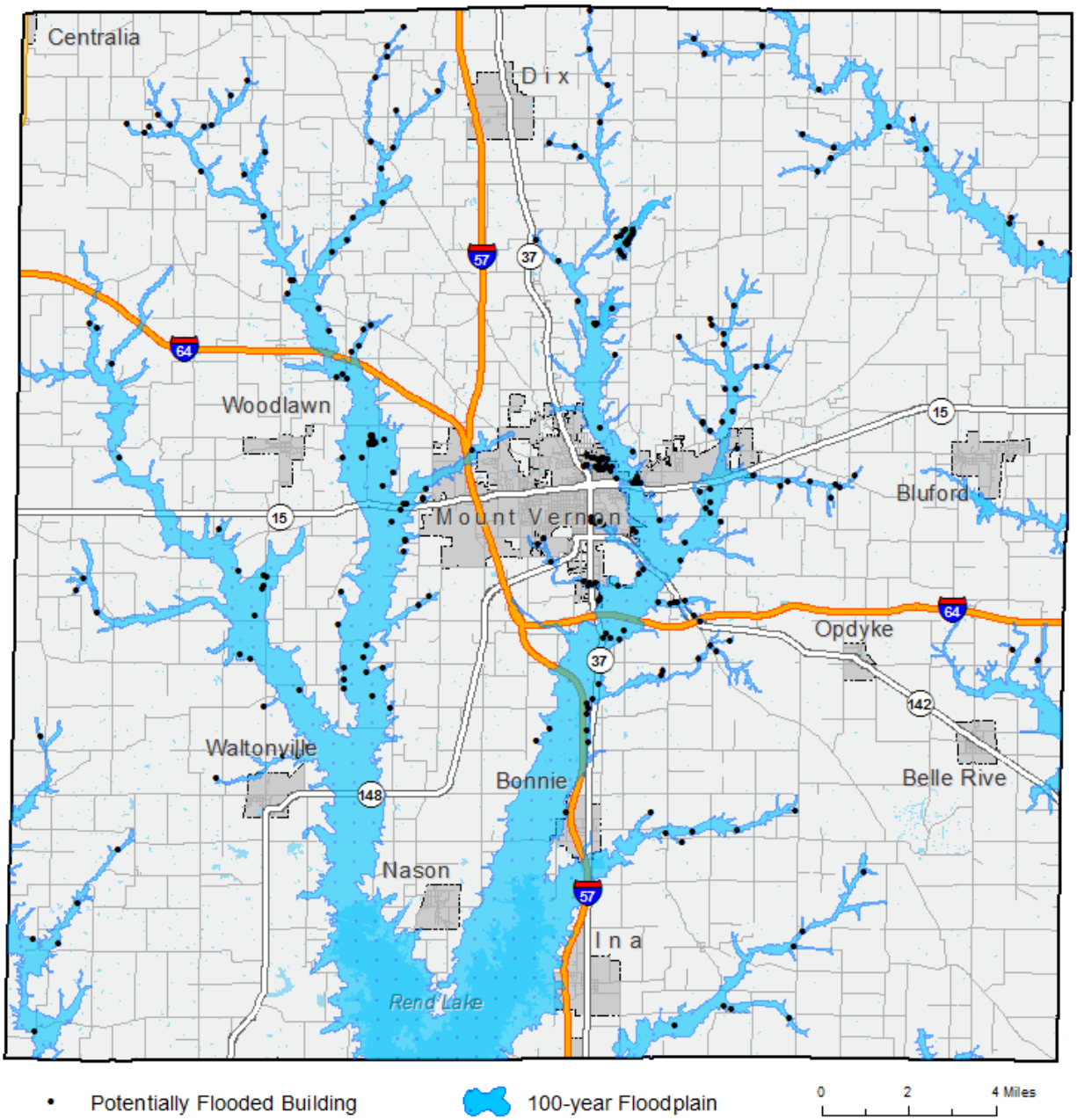


Table 4-28: Estimated Flood Losses within the 100-year Floodplain

Occupancy Class	Number of Structures	Estimated Building Related Losses
Residential	189	$223,441
Commercial	16	$555,989
Total:	**205**	**$2,779,430**

Critical Facilities Damage

The analysis did not identified any essential facilities that are subject to flooding.

Vulnerability Analysis to Future Assets/Infrastructure

Flooding may affect nearly any location within the county; there for all buildings and infrastructure are vulnerable. Table 4-8 includes the building exposure for Jefferson County. All essential facilities in the county are at risk. Appendix E include a list of the essential facilities in Jefferson County and Appendix F displays a large format map of the locations of all critical facilities within the county. Currently, the municipal planning commission reviews new developments for compliance with the local flood zoning ordinance. At this time no new construction is planned with the 100-year floodplain.

Suggestions for Community Development Trends

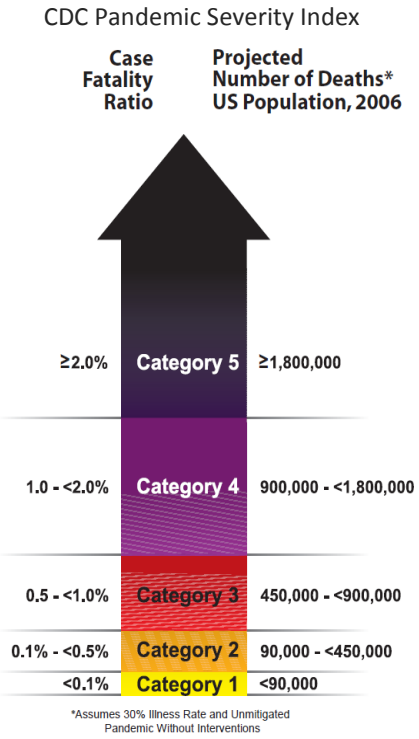
Reducing floodplain development is crucial to reducing flood-related damages. Areas with recent development may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible to drainage issues. Damage to these can cause back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.3.6 Disease Epidemic / Pandemic Hazard

Hazard Definition

Epidemics are common occurrences in the world of the 21st century. An epidemic is the rapid spread of infectious disease to a large number of persons in a given population within a short period of time. According to the World Health Organization (WHO), every country on earth as experienced at least one epidemic since the year 2000. Some epidemics, such as Swine Flu (H1N1) and Avian Flu (H5N1) have had global reach, but far more often, and with increasing regularity, epidemics strike at lesser geographic levels. This plan focuses on the most likely

A pandemic is a disease outbreak that has spread worldwide. The number of people affected by a pandemic depends upon the severity of the pandemic. The Centers of Disease Control and Prevention (CDC) has developed a Pandemic Severity Index, with categories of increasing severity (Category 1 to Category 5). The Pandemic Severity Index uses a ratio to estimate the number of expected deaths. This index helps communities with pandemic preparedness and planning.



Recently, the 2014 outbreak of the Ebola virus disease in several West African counties has prompted changes in the way the public health industry mitigates and responds to epidemics and pandemics. It is important to note that as of December 2014, only two imported cases, including one death, and two locally acquired cases in healthcare workers have been reported in the United States. Common epidemic and pandemic threats include (but not limited to) HIV/Aids, smallpox, tuberculosis, influenza, non-polio enteroviruses, and foodborne outbreaks. This plan will only highlight the most recent non-polio enteroviruses, influenza and foodborne illness records.

Previous Occurrences of Disease Epidemic / Pandemic Hazard

Non-polio enteroviruses are very common viruses that cause about 10 to 15 million infections in the United States each year. All populations are susceptible to non-polio enteroviruses, however there is an increased risk for infants, children, and teenagers due to a lack of immunity from previous exposures to the viruses. The infection is spread via close contact or touching surfaces with the infection. Those who become infected with the viruses do not get sick or come down with mild illnesses. Severe cases have the potential to infect the heart, brain or even paralyze.

One of the most recent non-polio enteroviruses cases occurred from mid-August to December 11th, 2014. The CDC confirmed a total of 1,149 people in 48 states and the District of Columbia with respiratory illness caused by Enterovirus D68 (EV-D68). This virus was first identified in California in 1962 and is one of the more than 100 non-polio enteroviruses. EV-D68 has been the most common type of enterovirus identified in 2014, leading to increases in illnesses among children and affecting those with asthma most severely.

Influenza pandemics occurs when a new type of influenza (flu) virus emerges. Pandemic flu spreads quickly from person to person because people have not been exposed to the new flu strain. Flu pandemics

have occurred throughout history with three since the unusually deadly 1918 "Spanish flu": the 1957 "Asian flu", 1968 "Hong Kong flu", and 2009 H1N1 flu. Public health experts say it's not a matter of if a flu pandemic will happen, but when.

During the 20th century, there were three major influenza pandemics. The 1918 Spanish flu was the deadliest flu pandemic, infecting 20% to 40% of the world's population. An estimated 50 million died from the Spanish flu, 675,000 of which were from the United States. The most recent pandemic was the H1N1 Flu Pandemic. On August 10th, 2010 the World Health Organization announced that the world is now in a post-pandemic period where the 2009 flu pandemic flu is expected to continue to circulate seasonally worldwide, causing variable levels of disease and outbreaks. Table 4-29 displays the influenza pandemics since 1918.

Table 4-29. Influenza Pandemics since 1918

Name	Date	Subtype	Deaths in America
1918-1919	Spanish Flu	H1N1	675,000
1957-1958	Asian Flu	H2N2	69,800
1986-1969	Hong Kong Flu	H3N2	33,800
2009-2010	2009 Flu Pandemic / Swine Flu	H1N1/09	8,870 - 18,300
		Total:	**787,470 – 796,900**

Source: U.S. Department of Health & Human Services

Foodborne disease is a common public health problem. The CDC estimates that each year roughly 1 in 6 Americans get sick by consuming contaminated foods or beverages. Many different disease-causing microbes, pathogens, or harmful toxins or chemicals can contaminate foods. There are eight known pathogens that account for the vast majority of illnesses, hospitalizations, and deaths. Nontyphoidal Salmonella, Toxoplasma, Listeria, and norovirus caused the most deaths. Table 4-30 identifies CDC-recorded death related foodborne outbreaks with reported cases in Illinois. Reported hospitalizations and deaths are national statistics for a given outbreak. Additional details of individual hazard events are on the CDC website.

The most severe confirmed outbreak of foodborne disease occurred in 2011 after a multistate outbreak of *Listeria monocytogenes* food poisoning linked to whole cantaloupes from Jensen Farms of Holly, Colorado. A total of 33 deaths and 143 hospitalizations were reported to the CDC from 28 States. Additionally, one woman pregnant at the time of illness had a miscarriage. Four people were infected in the State of Illinois.

Table 4-30. Confirmed Foodborne Disease Outbreaks with reported cases in Illinois. Hospitalizations and Deaths are National Statistics for a given outbreak.

Year	Genus Species	Food Vehicle	Total Hospitalizations	Total Deaths
2011	Listeria monocytogenes	Cantaloupe	143	33
2008	Salmonella enterica	Peanut Butter; Peanut Paste	166	9
2006	E.coli, Shiga toxin-producing	Spinach	103	5
2012	Salmonella enterica; Salmonella enterica	Cantaloupe	94	3
2007	Salmonella enterica	Pot Pie	108	3
1998	Salmonella enterica	Tomato, Unspecified	16	3
2008	Salmonella enterica	Pureed Food Diet	1	2
2008	Salmonella enterica	Peppers, Jalapeno; Peppers, Serrano; Tomato, Unspecified	308	2

Year	Genus Species	Food Vehicle	Total Hospitalizations	Total Deaths
2003	Salmonella enterica	Honeydew Melon	13	2
2012	Salmonella enterica	Cantaloupe	11	1
2011	Salmonella enterica	Ground Turkey, Unspecified	50	1
2010	Shigella sonnei	Bread, Nine Grain; Tomatoes	13	1
2009	Salmonella enterica	Melon	4	1
2008	Norovirus Genogroup II	Lettuce Based Salads	3	1
2000	Salmonella enterica	Salmon, Unspecified; Seafood Dish, Unspecified	10	1
		Total:	**1,043**	**68**

*CDC Foodborne Outbreak Online Database was last updated on 5/28/2014 to include 2012 outbreak data. Reporting agencies (state, local, territorial, and tribal health departments, and CDC) can modify their reports at any time, even months or years after an outbreak. Therefore, results from Foodborne Outbreak Online Database are subject to change.

Geographic Location for Disease Epidemic / Pandemic Hazard

Because of the nature of pandemic disease, the entire country, continent, or whole world is at risk. An epidemic can occur over a short period of time and strike at lesser geographic levels. Therefore the entire county has the same risk of disease epidemic / pandemic hazard.

Hazard Extent for Disease Epidemic / Pandemic Hazard

The extent of the hazard varies in terms of the physical characteristics of the epidemic / pandemic (e.g., the number of people infected and strength of the virus).

Risk Identification for Disease Epidemic / Pandemic Hazard

Disease epidemic / pandemics can occur within any area in the county; therefore, the entire county population and all critical infrastructure are vulnerable. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County. Disease Epidemic and Pandemic ranked as the number five hazard according to the Jefferson County Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	2	=	6

Vulnerability Analysis

A less severe pandemic and/or more severe epidemic would likely result in dramatic increases in the number of hospitalizations and deaths. A severe pandemic would likely overwhelm the nation's critical healthcare services and impose significant stress on our nation's critical infrastructure (including but not limited to the airline and travel industry). Epidemic and pandemics can create a shortage of staff, facilities, equipment, hospital beds, and other supplies needed to cope with the number of people who get the pandemic flu. Alternative sites, such as schools, may serve as medical facilities.

Suggestions for Community Development Trends

The U.S. Department of Health & Human Services and the State of Illinois Department of Public Health provides guidance to communities, individuals, health professionals, businesses and schools on epidemic

and pandemic mitigation. Planning and preparedness information is disseminated via Flu.gov. Various Fact sheets, tool kits, check lists and pre-pandemic planning guides are available. It is important that all entities in the county are prepared because the federal government cannot prepare for or respond to the challenge of a pandemic alone.

The Centers of Disease Control and Prevention (CDC) developed the 2007 Interim Pre-pandemic Planning Guide for local communities to mitigation against pandemic influenza. The goals are to limit the spread of a pandemic; mitigate disease, suffering, and death; and sustain infrastructure and lessen the impact on the economy and the functioning of society. A pandemic influenza mitigation framework was created and includes four mitigation interventions to help offset the effect on a communities. The implementation of these interventions require advance planning. As such, the CDC warns of second- and third-order consequence of the interventions which may require additional planning.

1. Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
2. Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.
3. Dismissal of students from school (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
4. Use of social distancing measures to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services.

4.3.7 Thunderstorm Hazard

Hazard Definition

Severe thunderstorms are weather events with one or more of the following characteristics: strong winds, large and damaging hail, and frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur at any time. A severe thunderstorm's impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria:

Hail 0.75 inches or greater in diameter

Hail is a possible product of a strong thunderstorm. Hail usually falls near the center of a storm, but strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, and some reports note hailstones larger than softballs.

Frequent and dangerous lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but lightning damages many structures and kills or severely injures numerous people in the United States each year.

Wind speeds greater than or equal to 58 miles per hour

Straight-line winds from thunderstorms are fairly common in Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences of Thunderstorm Hazards

The National Climatic Data Center (NCDC) database reported 72 hailstorms in Jefferson County since 1950. Hailstorms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was in April of 2014, when a powerful low pressure system across the plains states steered warmth and moisture northward for nearly two days. Hail was reported in Mount Vernon. Table 4-31 lists the significant hail storms (such as those that cause death, damage or injury) in Jefferson County.

Table 4-31: Selected NCDC-Recorded Hail that Caused Damage, Death, or Injury in Jefferson County

Location or County*	Date	Deaths	Injuries	Property Damage
Jefferson County	4/10/2013	0	0	$15,000
Mount Vernon	5/5/1999	0	0	$50,000
	Total:	**0**	**0**	**$65,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported 3 lightning events in Jefferson County. The most significant reported event was in October 2008 where Numerous showers and thunderstorms occurred along and ahead of a cold front as it moved east across Missouri. One of the storms produced a lightning strike that damaged an ambulance building in Mount Vernon. The lightning struck the radio communications tower, then travelled down cables to the building. A small fire was started where electrical lines entered the building. Damage to the building was very minor. Table 4-32 identifies NCDC-recorded lightning that caused damage, death, or injury in Jefferson County.

Table 4-32: Selected NCDC-Recorded Lightning that Caused Damage, Death, or Injury in Jefferson County

Location or County*	Date	Deaths	Injuries	Property Damage
Mount Vernon	08/26/1996	0	0	$5,000
Jefferson County	06/18/2011	0	0	$10,000
Mount Vernon	10/7/2008	0	0	$15,000
	Total:	**0**	**0**	**$30,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported 79 wind storms in Jefferson County with an estimated $14,307,400 in property damage since 1950. The most damaging wind event in Jefferson County was in July 2008 when widespread very damaging winds, estimated around 90 mph by a National Weather Service damage surveyor, raked most of Jefferson County. The city of Mount Vernon was especially hard hit, where about 14% of all homes received at least minor damage. Several thousands of trees were blown down, landing

on cars, power lines, roads, and houses. In the city of Mount Vernon, damage assessments indicated 1,107 homes were affected by some type of damage. 491 homes received minor damage such as roofs blown off, 152 received major damage (meaning they could be made habitable again), and 18 were destroyed. In addition, 446 other homes were affected, meaning damage was mainly cosmetic, such as shingles blown off. A business trailer owned by a construction company was blown over, landing across a roadway. Several hundred of the damaged homes sustained considerable roof damage, due to both falling trees and the direct effects of the wind. In south Mount Vernon near the intersection of Highways 142 and 37, an off-duty meteorologist reported virtually all trees were damaged, and many were blown down or uprooted. Most residential streets west of Route 37 were closed for at least a day due to fallen trees. Several people were trapped in their vehicles by fallen trees. The city's Wal-Mart store was evacuated after it sustained roof damage and a gas leak. About 80 patients of a nursing home were evacuated after it received roof damage. Windows were blown out of numerous structures. On Interstate 57, several semis were blown off the road or overturned, and a manufactured home was blown onto the southbound shoulder from a dealership located just off the highway. Gas pumps were blown over at service stations. Numerous street signs were blown down or damaged. Outside of the city of Mount Vernon in Jefferson County, one mobile home and two small permanent homes were destroyed, and around 100 other homes in the county sustained varying degrees of damage. The damaged homes included 27 in Woodlawn and eleven each in Bonnie and Nason. The roof of an elementary school in Woodlawn would likely require complete replacement. At least 11 classrooms were damaged, including some that were damaged by rainwater. Windows were blown out of houses around the county. At least 12 area residents, mostly in the city of Mount Vernon, sought treatment at a community hospital. Of those injured, about five were a direct result of the damaging wind. Power was out for several days in parts of the county. Damage to utility lines and poles was extensive. The primary utility company serving the county estimated damage to its property at over one million dollars. Crop damage was considerable. This complex of storms caused widespread damage from where it originated in the St. Louis area east to Mount Vernon. Table 4-33 identifies selected NCDC-recorded wind storms that caused major damage (over $500,000), death, or injury in Jefferson County.

Table 4-33: Selected NCDC-Recorded Wind Storms that Caused Major Damage (over $500,000), Death, or Injury in Jefferson County

Location or County*	Date	Deaths	Injuries	Property Damage
Jefferson County		0	0	$50,000
Jefferson County		0	0	$100,000
Jefferson County		0	0	$100,000
Jefferson County		5	0	$13,000,000
Belle Rive		0	0	$180,000
Jefferson County		0	0	$50,000
Mount Vernon		0	0	$60,000
Mount Vernon	4/27/2015	1	0	$45,000
	Total:	**5**	**0**	**$13,595,000**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location of Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the historical thunderstorms depends upon the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is highly likely. The County should expect high winds, hail, and lightning of widely varying magnitudes in the future. According to the Jefferson County Planning Team's assessment, severe thunderstorms are ranked as the number six hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
4	x	1	=	4

Vulnerability Analysis for Thunderstorm Hazard

The entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a damaged police station cannot serve the community). Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect impacts similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

A severe thunderstorm could impact roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that a severe thunderstorm could damage any number of these structures. The impacts to these structures include broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable causing risk to motorists.

Potential Dollar Losses from Thunderstorm Hazard

According to the NDCD, Jefferson County has incurred approximately $14 million in damages relating to thunderstorms, including hail, lightning, and high winds since 1950. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the potential dollar losses for a future event cannot be reliably constrained; however, based on average property damage in the past decade, SIU estimates that Jefferson County incurs property damages of approximately $200,000 per year related to severe thunderstorms.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to severe thunderstorm events.

Suggestions for Community Development Trends

Local officials should enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. It is suggested that the county should build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. This is particularly import where the future economic expansion is expected to take place, near the city of Mount Vernon near the I-57 – I-64 Interchange and along the Route 15. Additional warning sirens can warn the community of approaching storms to ensure the safety of Jefferson County residents and minimizing property damage.

4.3.8 Winter Storm Hazard

Hazard Definition of Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, or death and cause property damage and disrupt economic activity.

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves raindrops that freeze completely before reaching the ground. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

Ice storms are some of the most damaging winter storms in Illinois. Ice storms occur when moisture-laden Gulf air converges with the northern jet stream causing freezing rain that coats power and communication lines and trees with heavy ice. Strong winds can cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication.

Rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility, characterize significant snowstorms. A blizzard is categorized as a snow storm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. Strong winds during a blizzard blow falling and fallen snow, creating poor visibility and impassable roadways. Blizzards potentially result in property damage.

Blizzards repeatedly affect Illinois. Blizzard conditions cause power outages, loss of communication, and transportation difficulties. Blizzards can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe cold involves ambient air temperatures that drop to 0˚F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences of Winter Storm Hazard

The NCDC database reported 126 winter storm and extreme cold events for Jefferson County since 1950. The most recent reported event occurred in April of 2014 when a high pressure system moved east across the Ohio Valley bringing unseasonably cold air and widespread freezing temperatures. Lows were from 28 to 32 degrees at many locations in southern Illinois. The coldest observed temperature was 28 degrees at the Mount Vernon airport. Table 4-34 identifies NCDC-recorded winter storm events that caused damage, death, or injury in Jefferson County.

Table 4-34: NCDC-Recorded Winter Storms that Caused Damage, Death, or Injury in Jefferson County

Location or County*	Date	Deaths	Injuries	Property Damage
Jefferson County	01/20/1997	1	0	$0
Jefferson County	03/3/2008	0	0	$50,000
Jefferson County	02/01/2011	0	0	$4,000
	Total:	**1**	**0**	**$50,000**

Geographic Location of Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data are calculated regionally or in some cases statewide.

Hazard Extent of Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

Risk Identification of Winter Storm Hazard

Based on historical information, the probability of future winter storms in Jefferson County is likely. The county should expect winter storms with varying magnitudes to occur in the future. Winter storms ranked as the number seven hazard according to the Jefferson County Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
3	x	1	=	3

Vulnerability Analysis of Winter Storm Hazard

Winter storm impacts are equally likely across the entire county; therefore, the entire county is vulnerable to a winter storm and can expect impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-7 and 4-8 display the existing buildings and critical infrastructure in Jefferson County.

Critical Facilities

All critical facilities are vulnerable to winter storms. A critical facility will encounter many of the same impacts as other buildings within the county. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-7 lists the types and number of critical facilities for the entire county and Appendix F displays a large format map of the locations of all critical facilities within the county.

Building Inventory

Table 4-8 lists the building exposure in terms of types and numbers of buildings for the entire county. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that a winter storm could impact any structure. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses from Winter Storm Hazard

According to the NDCD, Jefferson County has incurred approximately $54,000 in damages relating to winter storms since 1950. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the potential dollar losses for a future event cannot be reliably constrained; however, based on average property damage in the past decade, SIU estimates that Jefferson County incurs property damages of approximately $1,000 per year related to winter storms, including sleet/ice and heavy snow.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Suggestions for Community Development Trends

Because winter storm events are regional in nature, future development across the county will also face winter storms.

Section 5. Mitigation Strategies

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. Throughout the planning process, the Jefferson County Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and a create a comprehensive range of mitigation strategies specific to each jurisdiction. This work provides a blueprint for reducing the potential loses identified in the risk assessment (section 4).

5.1 Existing Hazard Mitigation Policies, Programs and Resources

This section documents each jurisdictions existing authorities, policies, programs and resources related to hazard mitigation and the ability to improve these existing policies and programs. It is important to highlight the work that has been completed in Jefferson County that pertains to hazard mitigation. In addition, the following information also provides an evaluation of these abilities to determine whether they can be improved in order to more effectively reduce the impact of future hazards.

5.1.1 Successful Mitigation Projects

To be successful, mitigation must be a recurrent process that is continually striving to lessen the impact of natural hazards within the county. The following are projects that have been successfully completed after Jefferson County's 2009 Multi-Hazard Mitigation Plan was formally adopted.

Rend Lake Water Main Bypass

Rend Lake Conservancy District received HMGP funding to establish a bypass water main to protect service to Mount Vernon and several nearby communities. The former water main ran underneath Rend Lake and was vulnerable to seismic disturbance. In the event of a major earthquake repairs would be difficult, costly, and time-consuming, leaving a large number of residents without water service for an extended period. The bypass main provides a backup in case the primary main is damaged, and will be much easier to access and repair in an emergency as it will avoid the lake. The total cost of the project is $2,486,240. The Federal Emergency Management Agency provided 75% of the project cost with 25% provided by Rend Lake Conservancy District.

Community Development Assistance Program

Community Development Assistance Program (CDAP) grants are awarded to units of local government with populations of 50,000 or less that are not located within one of the six large urban counties that receive funds directly from the U.S. Department of Housing and Urban Development. The CDAP is a grant program that assists Illinois communities by providing grants to local governments to help them in financing economic development projects, public facilities and housing rehabilitation. Since 2009, Jefferson County has received 10 CDAP grants totaling $2,297,915.

A majority of the CDAP projects were to improve water, sanitary and storm-sewer systems. Jefferson County used the CDAP grant design a water distribution system for the rural area in southeast portion of the County. The village of Bonnie designed a new water tower. The village of Waltonville used the CDAP grant to design a potable water line to connect the village to Rend Lake Conservancy District. The city of Nason used the CDAP grant to upgrade the public water system.

Emergency Solutions Grant

The Illinois Emergency Solutions Grant (ESG) program provides funding to: (1) engage homeless individuals and families living on the street; (2) improve the number and quality of emergency shelters for homeless individuals and families; (3) help operate these shelters; (4) provide essential services to shelter residents, (5) rapidly re-house homeless individuals and families, and (6) prevent families and individuals from becoming homeless. Since 2009, Jefferson County has received one ESG grants totaling $34,933 to aid in shelter/services in Mount Vernon, including operations and administration.

Grant Management Program

The Illinois Grant Management Program provides grants to specific local governments, units of government, educational facilities and not-for-profit organizations by members of the General Assembly and the Governor for specific purposes to bolster the State's economy, promote a clean environment and improve the overall quality of life throughout the State of Illinois. Since 2009, Jefferson County has received 19 grants under the Grant Management Program totaling $1,840,000. The following communities utilized the Grant Management Program funds to complete hazard mitigation projects:

- Waltonville utilized grants funds to (1) cover the costs associated with drainage improvements on Knobb Street, (2) for reimbursement of prior incurred costs associated with the removal and replacement of roofing at the Grantee-owned facility, known as Waltonville High School, and (3) for a portion of the costs associated with the decommissioning of the Waltonville Lake dam and the restoration of the previous reservoir area to a drainage creek located directly east of the South Hirons Street and South Broadway Avenue intersection.
- Dix used grant funds to (1) cover the costs associated with infrastructure improvements that include stormwater drainage and village hall structural upgrades and (2) for a municipal improvement project involving the Village's storm water drainage system.
- Ina utilized the grant funds to wide, reconstruct and provide concrete/stone lining of existing ditch slopes.
- Mount Vernon used the grant funds to (1) purchase of a new fire engine to be located at the Grantee-owned facility at 1100 Main Street in Mount Vernon and (2) for a portion of the total costs associated with sanitary sewer pipes, force mains, restrained joint force mains, manhole covers, a sanitary sewer lift station and valve vaults, rock excavation, caps for steel casing pipe, and all associated construction activities along property on Veterans and Davidson Roadway.
- Woodlawn utilized grant funds for a portion of the total costs associated with the installation of approximately 9,887 feet of water main extension on Butternut Road and Drivers Lane.

5.1.2 National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. This section covers the County’s NIFP status, flood insurance policy and claim statistics, repetitive loss structures, and Community Rating System status.

NFIP Status

In Jefferson County, four out of the seven incorporated communities participate in the NFIP. Table 5-1 includes a summary of information for Jefferson County participation in the NFIP. Three communities were mapped with a flood risk but are sanctioned: Blurfod (1978), Nason (1975), and Waltonville (1975). Sanctioned communities do not qualify for flood-related Federal disaster assistance for acquisition, construction, or reconstruction purposes in Special Flood Hazard Areas. This may have serious consequences for the community's real estate market and economic viability, as each federally regulated lender must notify the purchaser or lessee that Federal disaster assistance is not available for that property in the event of a flood. Jefferson County will continue to provide information to its non-participating jurisdictions regarding the benefits of the National Flood Insurance Program.

The village of Bonnie, has an effective FIRM and participates in the NFIP. However, this community is mapped without base flood elevations. Areas with no elevation determined are those areas not studied by the detailed hydrologic/hydraulic methods. It is important to note that many states and local ordinances require a base flood elevation before a permit can be issued for any development in these areas.

Table 5-1. Information on Jefferson County's Participation in the NFIP

Community	Participate in the NFIP	Initial Flood Hazard Boundary Map Identified	Initial FIRM Identified	Current Effective FIRM Date
Jefferson County	Yes	03/04/77	09/17/10	09/17/10
Bonnie	Yes	02/15/74	08/19/85	09/17/10(M)
Centralia	Yes	05/03/74	12/18/84	11/16/11
Ina	Yes	08/16/74	09/17/10	09/17/10
Mount Vernon	Yes	06/07/74	09/17/10	09/17/10
Bluford	No	07/22/77	09/17/10	09/17/10
Nason	No	08/16/74	09/17/10	09/17/10
Waltonville	No	08/23/74	09/17/10	09/17/10

NFIP status and information are documented in the Community Status Book Report updated on 04/07/2015.
(M) – No Elevation Determined – All Zone A, C and X

Flood Insurance Policy and Claim Statistics

As of January 2015, 38 households paid flood insurance, insuring $3,996,100 in property value. The total premiums collected for the policies amounted to $22,168. Since the establishment of the NFIP in 1978, six flood insurance claims were filed in Jefferson County, totaling in $70,624.78 in payments. Table 5-2 summarizes the claims since 1978.

Table 5-2. Flood Insurance Claim Statistics for Jefferson County

Community	Total Losses	Closed Losses	Open Losses	CWOP Losses	Payments
Mount Vernon	6	5	0	1	$70,624.78

NFIP policy and claim statistics since 1978 until the most recently updated date of 01/31/2015. Closed Losses refer to losses that are paid; open losses are losses that are not paid in full; CWOP losses are losses that are closed without payment; and total losses refers to all losses submitted regardless of status. Lastly, total payments refer to the total amount paid on losses.

Repetitive Lose Structures

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the

market value of the structure at the time of each flood loss. Currently there are over 122,000 Repetitive Loss properties nationwide.

The Illinois Emergency Management Agency and Illinois Department of Natural Resources was contacted to determine the location of repetitive loss structures in Jefferson County. Records indicate that there are no repetitive loss structures within the county.

Community Rating System Status

Jefferson County and its incorporated areas do not participate in the NFIP'S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance. More than 1,200 communities from all 50 states participate in the CRS. Although joining the CRS is free, completing CRS activities and maintain a CRS rating will require a degree of commitment from the community, including dedicating staff. Joining the CRS could be one way Jefferson County or its incorporated communities improve their existing floodplain management policies and further reduce the flood hazard risk.

5.1.3 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 list Jefferson 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. The Jefferson County Planning Team worked to identify gaps in the current list of ordinances and suggested changes/additions in Section 5.3.

Table 5-3. Jefferson County's Jurisdiction Ordinances

Community	Comprehensive Plan	Zoning	Subdivision Control	Erosion Control	Storm Water Management	Burning	Seismic	Building Standards
Jefferson County	5/1970	N/A	9/14/1982	N/A	9/14/1982	N/A	N/A	N/A
Belle Rive	N/A	4/20/1970	N/A	N/A	N/A	N/A	N/A	N/A
Bluford	N/A	N/A	N/A	N/A	N/A	5/2/1989	N/A	5/2/1989
Bonnie	N/A	11/1999	N/A	N/A	N/A	N/A	N/A	N/A
Dix	5/20/1969	N/A	5/16/1974	N/A	5/16/1974	N/A	N/A	N/A
Ina	N/A	1965	N/A	N/A	N/A	N/A	N/A	1965
Mount Vernon	9/1963	1966	1966	1966	1966	1966	N/A	4/2007
Nason	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waltonville	5/1969	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Woodlawn	6/2002	N/A	5/4/2004	N/A	N/A	4/6/1999	N/A	N/A

The adoption of new ordinances, including the adoption of new development standards or the creation of hazard-specific overlay zones tied to existing zoning regulations, present opportunities to discourage hazardous construction and manage the type and density of land uses in areas of known natural hazards. Adopting and enforcing higher regulatory standards for floodplain management (i.e., those that go beyond the minimum standards of the NFIP) is another effective method for minimizing future flood

losses, particularly if a community is experiencing growth and development patterns that influence flood hazards in ways that are not accounted for on existing regulatory floodplain maps. Revisions to existing building codes also present the opportunity to address safe growth. Many state and local codes are based off national or industry standard codes which undergo routine evaluations and updates. The adoption of revised code requirements and optional hazard-specific standards may help increase community resilience.

5.1.4 Fire Insurance Ratings

By classifying communities' ability to suppress fires, the Insurance Service Office (ISO) Public Protection Classification Program helps communities evaluate their public fire-protection services. The program provides a countrywide standard that helps fire departments in planning and budgeting for facilities, equipment, and training. Information is collected on municipal fire-protection efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data using a Fire Suppression Rating Schedule. Rating are assigned from 1 to 10 where Class 1 generally represents superior property fire protection, and Class 10 indicates that the area's fire-suppression program doesn't meet ISO's minimum criteria. Table 5-4 displays the Jefferson County Fire Insurance Ratings and total number of employees.

Table 5-4. Jefferson County Fire Departments, Insurance Ratings, and Number of Employees/Volunteers

Fire Department	Fire Insurance Rating	Number of Employees
Belle Rive Fire Dept.	ISO 10	9
Jefferson Fire Protection District – Station 1	ISO 6/9	26
Jefferson Fire Protection District – Station 2	ISO 6/9	2
Jefferson Fire Protection District – Station 3	ISO 6/9	4
Jefferson Fire Protection District – Station 4	ISO 6/9	2
Mt. Vernon Fire Dept. – Station 1	ISO 3	9
Mt. Vernon Fire Dept. – Station 2	ISO 3	6
Mt. Vernon Fire Dept. – Station 3	ISO 3	6
Mt. Vernon Fire Dept. – Station 4	ISO 3	10
Waltonville Volunteer Fire Department	ISO 9	20
Webber Township Fire Protection District	ISO 9	18
Woodlawn Fire District	ISO 9	21

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identified Jefferson County as prone to several hazards. The Planning Team members understand that although they cannot eliminate hazards altogether, Jefferson County can work towards building disaster-resistant communities. Below is a generalized list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

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

Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

Objective: Minimize the amount of infrastructure exposed to hazards.
Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.
Objective: Improve emergency sheltering in Jefferson County.

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

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

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

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

5.3 Multi-Jurisdictional Mitigation Strategies

After reviewing the Risk Assessment, the Mitigation Planning Team was presented with the task of individually listing potential mitigation activities using the FEMA STAPLEE evaluation criteria (see table 5-5). FEMA uses their evaluation criteria STAPLEE (stands for social, technical, administrative, political, legal, economic and environmental) to assess the developed mitigation strategies. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. The Planning Team brought their mitigation ideas to Meeting 3.

Table 5-5. FEMA's STAPLEE Evaluation Criteria

Social	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.
Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	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.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	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.
Environmental	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.

Table 5-6 contains a comprehensive range of specific mitigation actions and projects for each jurisdiction, with an emphasis on new and existing buildings and infrastructure. At least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment. Each of the incorporated communities within and including Jefferson County was invited to participate in brainstorming sessions in

which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties.

All potential strategies and goals that arose through this process are included in Table 5-6. The mitigation strategies are arranged by hazard they directly address. In some cases, certain mitigation strategies can address all hazards. If provided by the jurisdiction, each mitigation strategy contains specific details pertaining to the implementation, responsible and/or organizing agency, and potential funding source. Potential funding sources are identified by Federal, State, Local, or Private. A code is assigned to each mitigations strategy for ease of reference when reviewing the prioritization of each mitigations strategies in Section 5.4

Table 5-6: Jefferson County's Multi-Jurisdictional Mitigation Strategies

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
	ALL HAZARDS				
AH1	**Develop public outreach programs to instruct public on what to do during potential hazards** *The County EMA, schools, Red Cross, and other organizations have implemented various forms of this strategy. Local resources have been used to target and inform the resident population. Additional funding will be sought from the Pre-Disaster Mitigation program.*	Jefferson County, Mt. Vernon CSD #80	Ongoing	L, S	Jefferson County EMA, Schools, Red Cross, other organizations
AH2	**Establish Local Emergency Planning Committee** *Funding has not been secured as of 2015. If funding is available, it is forecasted to be complete within approximately three years*	Sesser Fire Protection District	Proposed	L	Sesser Fire Protection District
AH3	**Medical Reserve Corps is in place via Jefferson County Health Department** *The County Health Department, schools, and other organizations will participate in this project. Local resources will be used to target and inform the resident population. Additional funding will be sought from the Pre-Disaster Mitigations program*	Jefferson County, Sesser Fire Protection District	Ongoing	L, S	Jefferson County Health Department, Sesser Fire Protection District
AH4	**Install new emergency radio system (Star COM radios) that is interoperable with different emergency agencies** *Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county. The County EMA, Sherriff Office, Rend Lake College, County Health Department, and Mt. Vernon Fire Department all now have Star COM radios. Local resources will be used to evaluate the cost benefits of the radios. Funding has not been secured as of 2015. If funding is available, it is forecasted to be complete within approximately three years*	Jefferson County, Kaskaskia College	Ongoing	L, S, F	Jefferson County EMA, K.C. Admin
AH5	**Establish Interoperability between utility companies and emergency responders** *County and Local Agencies continue to maintain contact with utility companies before during and after hazardous events. Funding has not been secured as of 2015, but Pre-Disaster Mitigation Program and Community Development grants are possible funding sources. If funding is available, implementation is forecasted to be completed within approximately five years.*	Jefferson County	Ongoing	L	Jefferson County EMA
AH6	**Purchase NOAA Weather Radios for Schools** *Local resources will be used to evaluate the cost benefits of radios. Funding has not yet been secured as of 2015 If funding is available, is forecasted to be complete within approximately three years.*	Jefferson County	Ongoing	L	Jefferson County EMA
AH7	**Conduct response and communication disaster training for EMAs and deputies** *Improve education of emergency personnel and public officials. The County EMA will oversee the implementation of this project. Funding has not been secured, but additional funding will be sought from Department of Homeland Security and local resources. Implementation is forecasted to be complete within approximately three years.*	Jefferson County	Ongoing	L	Jefferson County EMA
AH8	**Establish GIS database of emergency responders** *The Jefferson County Assessor's Office will oversee this project. The database is updated annually.*	Jefferson County	Ongoing	L	Jefferson County Assessor's Office
AH9	**Develop a resource list to assist potential at-risk and/or special needs communities** *The County EMA will oversee the implementation of this project. Funding has not been secured, but additional funding will be sought from local resources. Implementation is forecasted to be complete within approximately five years.*	Jefferson County	Ongoing	L	Jefferson County EMA
AH10	**Develop mutual aid agreements** *Tri-County Electric Company will oversee the implementation of this project. Funding has not been secured as of 2015. Implementation is forecasted to be initiated within approximately three years.*	Tri-County Electric Company	Ongoing	F, P	Tri-County Electric Company

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
AH11	**Construct a new Emergency Operations Center** *The Jefferson County EMA will oversee the implementation of this project. The project is approximately 50% completed. The pre-disaster mitigation program and community development grants are a possible funding source. Implementation, if funding is available, is forecasted to be initiated within approximately one year.*	Jefferson County	Ongoing	L, F	Jefferson County EMA
AH12	**Harden existing community shelters and critical facilities including the county health department, Crossroads Community Hospital and SSM Health Good Samaritan Hospital** *The County EMA will oversee the implementation of this project. 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 is forecasted to be initiated within approximately one year.*	Jefferson County, Northeast Water Company, Tri-County Electric Company, Opdyke-Belle Rive CCDS #5, Farrington CCSD #99, Jefferson County Health Department, Crossroads Community Hospital, SSM Health Good Samaritan Hospital	Proposed	L, S, F, P	Jefferson County EMA, Farrington School Board and Superintendent, Northeast Water Company, Tri-County Electric Company, Opdyke-Belle Rive CCDS #5,
AH13	**Identify and procure backup water supply** *Funding has not been secured as of 2015. Implementation is forecasted to be initiated within three to five years.*	Northeast Water Company	Proposed	S, F	Northeast Water Company
AH14	**Construct additional community safe rooms** *Various jurisdictions interested in protecting citizens via construction and implementation of safe rooms. Local resources and additional grants will be used to procure the generators. If funding is available, is forecasted to be complete within three to five years*	Bethel School District #82, Comprehensive Connections Strategies, Farrington CCSD #99, **Kaskaskia College (ongoing)**, Opdyke-Belle Rive CCDS #5	Proposed	L, S, F	Bethel BOE, ROE #13, Comprehensive Connections Strategies, Farrington School Board and Superintendent, Kaskaskia College, Opdyke-Belle Rive CCDS #5
AH15	**Purchase back-up generators for critical facilities** *IESMA Generator stockpiles in place in Effingham & Franklin Counties as of 2011. The County EMA will oversee the implementation of this project. Local resources and additional grants will be used to procure the generators. If funding is available, is forecasted to be complete within approximately one year.*	Jefferson County, Northeast Water Company	Proposed	L, S	Jefferson County EMA, Northeast Water Company
AH16	**Improve/maintain access to public right-of-ways (Tree Management)** *Tri-County Electric Company will oversee the implementation of this project. Local resources and additional grants will be used to maintain trees along roads and powerlines. If funding is available, is forecasted to be begin within one year.*	Tri-County Electric Company	Ongoing	F, P	Tri-County Electric Company
AH17	**Acquire portable lighting for mass casualty preparation** *Kaskaskia College will oversee the implementation of this project. Local resources and additional grants will be used to procure the portable lighting. If funding is available, is forecasted to be complete within three to five years*	Kaskaskia College	Proposed	L	Kaskaskia College
AH18	**Purchase Emergency response equipment for clean-up and removal, e.g. backhoe with clamp device, bobcat skid steer** *The County will oversee the implementation of this project. Funding has not been secured, but additional funding will be sought from IDOT and Local resources. Implementation is forecasted to be complete within approximately five years.*	Jefferson County	Proposed	L, S, F	Jefferson County EMA

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
AH19	**Acquire hazard event training trailer** *The County EMA will oversee the implementation of this project. Funding has not been secured, but additional funding will be sought from the Pre-Disaster Mitigation program. Implementation is forecasted to be initiated within approximately three years.*	Jefferson County	Ongoing	L, S, F, P	Jefferson County EMA
TORNADO / SEVERE THUNDERSTROMS					
ST1	Provide Jurisdiction Wide Siren Warning Coverage Extend sirens to cover all of Mt. Vernon and to cover a greater extent of the county.	City of Mt. Vernon, S.F.P.D, Jefferson County	Ongoing	L, S, F	Mt. Vernon Mayor, City Manager, Jefferson County EMA
ST2	Require Construction of Safe Rooms in New Public Buildings	City of Mt. Vernon, Comprehensive Connections, Opdyke-Belle Rive CCDS #5	Proposed	L, S, F, P	Mt. Vernon EMA
ST3	Construct New/ Additional Safe Rooms 40% of student enrollment live in mobile home parks	Bethel School District #82, City of Mt. Vernon, Farrington CCSD #9	Proposed	L, S, F	Bethel BOE, ROE #13, Mt. Vernon EMA
ST4	Retrofit Structures to Withstand High Winds	Farrington CCSD #9	Proposed	L, S, F	School Board
ST5	Construct Utility Lines to Withstand High Winds	Tri-County Electric Company	Proposed	F, P	Utility Company
FLOODING					
F1	**Implement a plan for voluntary buyouts for structures within Jefferson County** *The County EMA will oversee the implementation of this project. Local resources will be used to evaluate the applicable areas. Funding has not been secured, but additional funding will be sought from the Pre-Disaster Mitigation program. Implementation is forecasted to be initiated within approximately three years.*	Jefferson County	Proposed	L, S	Jefferson County EMA
F2	**Evaluate Structures and Utilities in flood-prone areas** *Tri-County Electric Company will oversee the implementation of this project. Local resources and additional grants will be used to mitigate loss of utilities during flooding events. If funding is available, is forecasted to be begin in three to five years.*	Tri-County Electric Company	Ongoing	F, P	Tri-County Electric Company
F3	**Flood-proof or elevate facilities** *Flood-proofing needed in flood prone residential and non-residential areas. Local resources and additional grants will be used to procure the generators. If funding is available, is forecasted to be complete within three to five years*	Tri-County Electric Company, Comprehensive Connections Strategies	Ongoing	L, S, F, P	Public Utilities, Comprehensive Connections Strategies
F4	**Install backflow valves and sump pumps in critical facilities** *Additional sump pumps needed in flood prone residential and non-residential areas. Local resources and additional grants will be used to procure the generators. If funding is available, is forecasted to be complete within three to five years*	Mt. Vernon, Comprehensive Connections, Kaskaskia College, Comprehensive Connections Strategies	Proposed	L, S, F	Public Utilities, Comprehensive Connections Strategies
F5	**Implement stream maintenance to improve floodplain management** *The County EMA and DNR will oversee the implementation of this project. Funding has not been secured as of 2015. Community development grants are a possible funding source. Implementation, if funding is available, is forecasted to be complete within approximately three years.*	Jefferson County	Ongoing	S	Jefferson County EMA and IDNR
F6	**Culvert Replacement** *Public utilities will oversee the implementation of this project. Local resources and additional grants will be used to procure the generators. If funding is available, is forecasted to be complete within three to five years*	Mt. Vernon, Kaskaskia College	Proposed	L, S, F	Public Utilities

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
F7	**Purchase permanent signage or flood gates for flood-prone areas** *The Jefferson County EMA will oversee the implementation of this project. Local resources and IDOT will be used to evaluate the areas for signage. Funding has not been secured, but IDOT and IDNR are possible sources. Implementation is forecasted to be complete within approximately three years.*	Jefferson County	Ongoing	L, S	Jefferson County EMA
WINTER STORMS					
HAZARDOUS MATERIALS RELEASE					
HAZ1	**Develop/Update hazmat emergency response plan**	City of Mt. Vernon, S.F.P.D, Kaskaskia College	Ongoing	L, S, F	City of Mt. Vernon, S.F.P.D, Kaskaskia College
HAZ2	**Conduct hazardous materials commodity flow study**	City of Mt. Vernon	Proposed	S, F	City of Mt. Vernon
HAZ3	**Acquire protective gear**	S.F.P.D	Proposed	F	S.F.P.D
DROUGHT / EXTREME HEAT / FIRE					
H1	**Retrofit Water Supply Systems** *Enhance water supply to the campus in case of fire and extreme heat.*	Kaskaskia College	Proposed	L, F	Kaskaskia College
EARTHQUAKES					
EQ1	**Retrofit existing bridges to withstand potential hazards** *The Jefferson County EMA and IDOT will oversee the implementation of this project. Local resources and additional grants will be used to procure the system. If funding is available, is forecasted to be complete within approximately three years.*	Jefferson County	Ongoing	L, S, F, P	Jefferson County and IDOT
EQ2	**Retrofit/harden critical structures, Replace and improve pump stations** *The County EMA and public utilities will oversee the implementation of this project. Funding has not been secured as of 2009, but the pre-disaster mitigation program is a possible funding source. Implementation, if funding is available, is forecasted to be complete within approximately five years.*	Jefferson County, Northeast Water Company, Tri-County Electric Company	Proposed	L, S, F	Jefferson County EMA, Public Utilities
EQ3	**Install automatic shutoff valves and retrofit buildings** *The County EMA, municipalities, and utility companies will oversee the implementation of this project. Local and corporate resources will be used to identify and install inertial valves. Funding has not been secured as of 2015, but the pre-disaster mitigation program is a possible funding source. Implementation, if funding is available, is forecasted to be complete within approximately five years.*	Jefferson County	Proposed	L, S, F	Jefferson County EMA, Municipalities, and utility companies
EQ4	**Conduct earthquake drills and training** *The Jefferson County EMA and IEMA will continue to oversee this project. It started in February 2009.*	Jefferson County	Ongoing	L, S, F, P	Jefferson County EMA and IEMA
EQ5	**Adopt 2009 International Building Code** *Adjust ordinance to use updated code*	City of Mt. Vernon	Proposed	L, S, F	City Administrator
EQ6	**Stockpile building materials, such as rock and piping, for building temporary bridges** *The County EMA and IDOT will oversee the implementation of this project. Funding has not been secured, but additional funding will be sought from IDOT. Implementation is forecasted to be complete within approximately five years.*	Jefferson County	Ongoing	L, S, F, P	Jefferson County and IDOT
DISEASE EPIDEMICS / PANDEMICS					
DEP1	**Enhance pandemic surveillance reporting systems (pharmacy and sentinel computers, etc.)** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Jefferson County	Proposed	L, S, F	Jefferson County Health Department and Hospitals

Code	Mitigation Strategy	Jurisdictions Involved	Status	Funding Source*	Responsible Organization or Agency
DEP2	**Start non-pharmaceutical intervention program** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Jefferson County	Proposed	L, S, F	Jefferson County Health Department and Hospitals
DEP3	**Build a robust strategic stockpile** *County Health Department and Hospitals will oversee implementation of this project. Will seek local, state, and federal funding for project.*	Jefferson County	Proposed	L, S, F	Jefferson County Health Department and Hospitals
DEP4	**Develop plan for local healthcare mass care situations** *County Health Department and Hospitals will oversee implementation of this project. Will seek local and state for project.*	Jefferson County	Proposed	L, S, F	Jefferson County EMA, Health Department, and Hospitals
DEP5	**Portable morgue and mutual aid agreement and response plan** *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.*	Jefferson County	Ongoing	L	Jefferson County Coroner

* F – Federal, S – State, L – Local, P – Private

5.4 Prioritization of Multi-Jurisdictional Mitigation Strategies

Implementation of the mitigation strategies is critical to the overall success of the mitigation plan. It is important to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is vital. It is important to note that some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action. It is also critical to take into account the amount of time it will take the community to complete the mitigation project.

Table 5-7 through 5-9 displays the priority ranking for each mitigation strategy for the Jefferson County Municipalities, Nonprofits, and Schools respectively. Each code refers to a specific mitigations strategy listed in Table 5-6. For each participating jurisdiction a rating (high, medium, or low) was assessed for each mitigation item. The ranking is the result of the STAPLEE evaluation and the timeframe the community is interested in completing the strategy: H - High 1-3 years; M - Medium 3-5 years; and L - Low 5+years.

Table 5-7. Prioritization of the Jefferson County and Municipalities' Mitigation Strategies

Code	Priority Ranking*																			
	Jefferson County	Belle Rive	Bluford	Bonnie	Centralia	Dix	Ina	Mount Vernon	Nason	Waltonville	Woodlawn	Bethel School District #82	Farrington CCSD #99	Opdyke-Belle Rive CCDS #5	Kaskaskia College	Comprehensive Connection	Mt. Vernon CSD #80	Northeast Water Compnay	Sesser Fire Protection District	Tri-County Electric Company
AH1	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	-	-	-
AH2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	-	M	-
AH3	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-
AH4	M	-	-	-	-	-	-	-	-	-	-	-	-	-	H	-	-	-	-	-
AH5	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH6	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH7	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH8	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH9	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L
AH11	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH12	H	-	-	-	-	-	-	-	-	-	-	-	M	M	-	-	-	L	-	L
AH13	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	-	M	-	-
AH14	-	-	-	-	-	-	-	-	-	-	-	M	M	-	M	H	-	-	-	-
AH15	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-
AH16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L
AH17	M	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	-	-	-
AH18	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AH19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAZ1	-	-	-	-	-	-	-	H	-	-	-	-	-	-	H	-	-	-	M	-
HAZ2	-	-	-	-	-	-	-	M	-	-	-	-	-	-	-	-	-	-	-	-
HAZ3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-
F1	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L
F3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	-	-	-	L
F4	-	-	-	-	-	-	-	M	-	-	-	-	-	-	H	H	-	-	-	-

Code	Priority Ranking*																			
	Jefferson County	Belle Rive	Bluford	Bonnie	Centralia	Dix	Ina	Mount Vernon	Nason	Waltonville	Woodlawn	Bethel School District #82	Farrington CCSD #99	Opdyke-Belle Rive CCDS #5	Kaskaskia College	Comprehensive Connection	Mt. Vernon CSD #80	Northeast Water Compnay	Sesser Fire Protection District	Tri-County Electric Company
F5	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F6	-	-	-	-	-	-	-	M	-	-	-	-	-	-	H	-	-	-	-	-
F7	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F8	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST1	-	-	-	-	-	-	-	L	-	-	-	-	-	-	-	-	-	-	H	-
ST2	-	-	-	-	-	-	-	M	-	-	-	-	-	M	-	-	-	-	-	-
ST3	-	-	-	-	-	-	-	M	-	-	-	M	M	M	-	H	-	-	-	-
ST4	-	-	-	-	-	-	-	-	-	-	-	-	M	M	-	-	-	-	-	-
ST5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L
H1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	-	-	-
EQ1	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EQ2	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L
EQ3	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EQ4	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EQ5	-	-	-	-	-	-	-	H	-	-	-	-	-	-	-	-	-	-	-	-
EQ6	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEP1	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEP2	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEP3	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEP4	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEP5	H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* H – High, M – Medium, L – Low

Section 6. Plan Implementation and Maintenance

6.1 Implementation through Existing Programs

Throughout the planning process, the Jackson County Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and a create a comprehensive range of mitigation strategies specific to each jurisdiction. This work provides a blueprint for reducing the potential loses 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 Jefferson County Emergency Management Agency will be the local champion for the mitigation actions. The Jefferson 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 action.

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 Jefferson County Emergency Management Agency and forwarded to the Planning Team for discussion. Education efforts for hazard mitigation will be an ongoing effort of Jefferson 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 Jefferson County Emergency Management Agency.

6.2 Monitoring, Evaluation, and Updating the MHMP

Throughout the five-year planning cycle, the Jefferson County Emergency Management Agency will reconvene the Planning Team to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held in 2020 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the 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 Jefferson County Board.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated Hazus-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, these updated data will be used for future risk assessments and vulnerability analyses.

Definitions

100-year Floodplain	Areas subject to inundation by the 1-percent-annual-chance flood event.
Critical Facility	A structure, because of its function, size, service area, or uniqueness, that has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. This includes, but are not limited to, water and wastewater treatment facilities, municipal buildings, educations facilities, and non-emergency healthcare facilities.
Community Rating System (CRS)	A voluntary program for National Flood Insurance Program (NFIP) participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.
Comprehensive Plan	A document, also known as a "general plan," covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all the physical elements that will determine the community's future developments.
Disaster Mitigation Act of 2000 (DMA 2000)	The largest legislation to improve the planning process. It was signed into law on October 30, 2000. This new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.
Essential Facility	A subset of critical facilities that represent a substantial hazard to human life in the event of failure. This includes (but not limited to) hospital and fire, rescue, ambulance, emergency operations centers, and police stations.
Federal Emergency Management Agency	An independent agency created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.
Hazard	A source of potential danger or adverse condition.
Hazard Mitigation	Any sustained action to reduce or eliminate long-term risk to human life and property from hazards.

Hazard Mitigation Grant Program (HMPG)	Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration.
Hazus-MH	A geographic information system (GIS)-based disaster risk assessment tool.
Multi-Hazard Mitigation Planning	Identify policies and actions that can be implemented over the long term to reduce risk and future losses from various hazardous events.
National Flood Insurance Program	Administered by the Federal Emergency Management Agency, which works closely with nearly 90 private insurance companies to offer flood insurance to property owners and renters. In order to qualify for flood insurance, a community must join the NFIP and agree to enforce sound floodplain management standards.
Planning Team	A group composed of government, private sector, and individuals with a variety of skills and areas of expertise, usually appointed by a city or town manager, or chief elected official. The group finds solutions to community mitigation needs and seeks community acceptance of those solutions.
Risk Priority Index	Quantifies risk as the product of hazard probability and magnitude so Planning Team members can prioritize mitigation strategies for high-risk-priority hazards.
Risk Assessment	Quantifies the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people.
Strategy	A collection of actions to achieve goals and objectives.
Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions.

Acronyms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

C

CDC – Centers for Disease Control
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act of 2000

E

EAP – Emergency Action Plan
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map

G

GIS – Geographic Information System

H

Hazus-MH – Hazards USA Multi-Hazard
HMGP – Hazard Mitigation Grant Program
HUC – Hydrologic Unit Code

I

IA – Individual Assistance
IDNR – Illinois Department of Natural Resources
IDOT – Illinois Department of Transportation
IEMA – Illinois Emergency Management Agency
ISO – Insurance Service Office
ISGS – Illinois State Geological Survey
ISWS– Illinois State Water Survey

M MHMP – Multi-Hazard Mitigation Plan

N NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NID – National Inventory of Dams
NOAA – National Oceanic and Atmospheric Administration
NSFHA – Non-Special Flood Hazard Area

P PA – Public Assistance
PHMSA– Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million

R RPI – Risk Priority Index

S SIU – Southern Illinois University Carbondale
SPC – Storm Prediction Center
STAPLEE – Social, Technical, Administrative, Political, Legal, Economic, and Environmental

U USGS – United States Geological Survey

W WHO – World Health Organization

Appendices

Appendix A. Meeting Minutes

Appendix B. Local Press Release and Newspaper Articles

Appendix C. Adopting Resolutions

Appendix D. Historical Hazards

Appendix E. List of Essential Facilities

Appendix F. Critical Facilities

Appendix A. Meeting Minutes

Formal Mitigation Planning Meetings

Meeting 1 – September 4th, 2014

Meeting 2 – January 15th, 2015

Meeting 3A – May 13th, 2015

Meeting 3B – June 9th, 2015

Meeting 4 – Month Date, Year

Outside Meetings

Disaster Risk Reduction Steering Committee Meeting – December 17th, 2014

Disaster Risk Reduction Steering Committee Meeting – January 21st, 2015

Disaster Risk Reduction Steering Committee Meeting – February 18th, 2015

Disaster Risk Reduction Steering Committee Meeting – March 18th, 2015

Jefferson County Board Meeting – March 23rd, 2015

Meeting 1 – September 9th, 2014

IEMA Multi-Hazard Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 1
Chairman: Steve Lueker
Plan Directors: Southern Illinois University and Greater Egypt Region Planning and Development Commission

Meeting Date: September 8th, 2014

Meeting Time: 2:00pm

Place: Municipal West Building, 200 Potomac Blvd, Mount Vernon, IL 62684

Planning Team/Attendance: 16

Introduction to the Multi-Hazard Mitigation Planning Process and Risk Assessment

The meeting is called to order

Prof. Nicholas Pinter opened the meeting by explaining that the planning team is here today to update the 2009 Jefferson County Multi-Hazard Mitigation Plan. He introduced the planning partners: Jefferson County, Southern Illinois University and Greater Egypt Regional Planning and Development Commission.

A PowerPoint presentation was given by Prof. Nicholas Pinter and Amanda Damptz. Prof. Pinter explained that this project is in response to the Disaster Mitigation Act of 2000. The project is funded by a grant awarded by FEMA. Once the project is completed, it opens the County and its participating jurisdictions up to additional Hazard Mitigation Assistance Funds. Prof. Pinter divided the planning process into four meetings. During Meeting 1, the focus will be on natural disasters that are relevant to the County. As a group, the planning team will complete a hazard ranking exercise. Identified hazards will be given a probability rating and ranked by their occurrence and potential level of risk. At Meeting 2, the public meeting, SIU will present historic accounts of natural disasters that have affected the area. The results from the risk assessment report will also be presented. Meeting 3 will consist of a brain storming session focused on disasters that were analyzed in the risk assessment report. FEMA requires that for every identified hazard, two strategies to mitigate the loss and damage must be in place. At Meeting 4, the planning team will review the plan prior to sending it to IEMA. IEMA will review the plan and make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once approved by FEMA, the Planning Team will present the Mitigation Plan to the County Board for

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adoption. Participating Jurisdictions must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA.

SIU Staff Researcher, Amanda Damptz, presented historic accounts of natural disasters that have affected the County. During her presentation, she fielded any questions relevant to each hazard. She stressed that this information should help guide the planning team when completing the hazard ranking exercise.

Prof. Pinter provided the planning team with a Hazard Ranking Exercise handout. The Planning Team was then asked to assess and rank the hazards that could potentially befall Jefferson County using the risk priority index (RPI). The identified hazards were ranked as followed for Jefferson County:

1. Tornadoes
2. Hazardous Material Release
3. Earthquakes
4. Flooding
5. Pandemics
6. Severe Storms (Thunderstorm, High Winds, Hail, Lightening)
7. Winter Storms

Finally, representative from each jurisdiction present at the meeting completed the Hazard Ranking Exercise for their respective jurisdiction.

Meeting was adjourned

Jefferson County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Daniels, Ron		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Superintendent	Regional Office of Education	
Deichmann, Chris		☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Acting Chief	Mt. Vernon Police Department	6.4
Gahagan, Janice		☐ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen	Volunteer	Community Volunteer	1.5
Hale, Tina		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Community Relations Coordinator	Ameren Illinois	
Hertenstein, Keith		☐ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen	Volunteer	Jefferson County EMA	5
Jennings, Brian		☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Deputy EMA Coordinator	City of Mt. Vernon EMA	2
Lueker, Steven L.		☒ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen	County Coordinator	Jefferson County EMA	5

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Jefferson County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Barkau, Bruce		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director of Member Services	Tri-County Electric Cooperative, Inc.	4
Beal, Robert		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Chief	Jefferson Fire Protection District	
Burge, Scott		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Major	Jefferson County Sheriff	5
Carpenter, Tyler		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Planner	Greater Egypt RP&DC	48
Clodi, Robert		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Manager	Rend Lake Conservancy District	20
Collins, Chris		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Airport Manager	Mt. Vernon Airport Authority	
Damptz, Amanda		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Staff Researcher & Project Manager	Natural Hazards Research and Mitigation Group- SIU	

(September 9, 2014) Page 1

Jefferson County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Mike Maddox mikemaddox@siu.edu Southern Illinois Healthcare	MM	☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	RHCC Coordinator	Southern Illinois Healthcare	114
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

Jefferson County Multi-Hazard Mitigation Planning Meeting 1 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Minnis, Cary	CM	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Executive Director	Greater Egypt RP&DC	
Mulch, Roger		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Sheriff	Jefferson County Sheriff	
Pinter, Nicholas (Prof.)	NP	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Project Director	Natural Hazards Research and Mitigation Group- SIU	
Sargent, Kevin	KS	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	EMA Coordinator	City of Mt. Vernon EMA	2.0
Simmons, Brandon		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	County Engineer	Jefferson County Highway Department	
Stevens, Mark	MS	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Director	Jefferson County Health Department	4 mi
Page, Terri		☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Captain	MVPD	6.4

Meeting 2 – January 6th, 2015

IEMA Multi-Hazard Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 2
Chairman: Steve Lueker
Plan Directors: Southern Illinois University and Greater Egypt Region Planning and Development Commission

Meeting Date: January 6th, 2015

Meeting Time: 6:00pm

Place: Rolland Lewis Building, 800 S 27th St, Mt Vernon, IL

Planning Team/Attendance: 24

Public Meeting and County Risk Assessment

The meeting is called to order

Prof. Nicholas Pinter opened the meeting by explaining that the planning team is here today to update the 2009 Jefferson County Multi-Hazard Mitigation Plan. He introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: historic accounts of natural disasters that have affected Jefferson County and the results from the risk assessment report.

A draft of the Jefferson County Mitigation Plan was also given to each planning team member for review. It was explained by Prof. Pinter that the each planning team member should review the plan and consider the risk assessment before attending the next meeting. The next meeting will take place in March. This meeting will involve developing mitigation strategies to address each ranked hazard.

Prof. Pinter then asked the audience for questions and comments. Several changes to the plan were suggested:

- Check the physical location of the EOCs
- Woodlawn CCSD #4 and Woodlawn High #205 might consolidate – waiting for final vote
- Webber Township High and Bluford CCSD #114 might consolidate – waiting for final vote

Project Manager Amanda Damptz noted the changed and promised to make all corrections before the next meeting. Prof. Pinter thanked those who came and closed the presentation.

Meeting was adjourned

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Jefferson County Multi-Hazard Mitigation Planning Meeting #2 Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Keith Hertenstein 618-315-1792	AKH	☐ As a Public Employee ☒ As an Interested Citizen	Assistant Vol. Coordinator ICEMA		20
Janice Gillaspie 309-762-1082	JGG	☐ As a Public Employee ☐ As a Private Employee ☑ As an Interested Citizen	Volunteer. J.C.E.M.E.		4
Chris Eschle 812-270-0774	CEE	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Safety Supervisor	Evansville Western Railway	140
Travis Cupston 812-243-4264	TMC	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Safety Manager	Evansville Western Railway	200
Steve Lueker 618-316-3077	SLL	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	County Fire Coordinator	Jefferson County	10
Amanda Malear 618-314-7071	AM	☐ As a Public Employee ☐ As a Private Employee ☑ As an Interested Citizen	Volunteer ICEMA		80
Amanda Damptz	AD	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	SIU ← →	Project Manager	0

(January 6, 2015) Page 1

Jefferson County Multi-Hazard Mitigation Planning Meeting #2 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Jack Hamilton	JH	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Volunteer		4
Cheryl Hertenstein	CH	☐ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen			16
James R Hertenstein	JRH	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	North east Water		16
TRENT Page	TP	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mt Vernon Police		2
Travis Allen	TA	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Sheiffs office		
MACK NEWTON	[illegible]	☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	UNION PACIFIC RR HAZMAT		150
Sandra Kabat	SK	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Supt. of Farrington CCSD #99		15

Jefferson County Multi-Hazard Mitigation Planning Meeting #2 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Nicholas Pinter	NP	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen		SIU	
Steve Fletcher wcwc@netwitz.net		☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	Mgr	Washington County Water Co	60
Roy Baker		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	VOL	Salem South BAPTIST Relief	
Phyllis Kane	PK	☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	Cashier	Tri County Electric	10
William Pixley bpixley@mtvernon.lib.il.us		☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Library Director	C.E. Brehm Memorial Library	1
Robert Kane	RK	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	EMA		12
Cynthia Coughlin	CKC	☐ As a Public Employee ☐ As a Private Employee ☒ As an Interested Citizen			6

Jefferson County Multi-Hazard Mitigation Planning Meeting #2 Attendance

Name and Contact Information (email or phone)	Your Initials	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Bryan Jennings Bjennings113@gmail.com	BJ	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	FF/P Dep. EMA director	City of Mt. Vernon	25
Nancy Kinsey nkinsey@kaskaskia.edu	NK	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	VP Administrative Services	Kaskaskia College	25
Tyler Carpenter	TMC	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Planner	Greater Egypt	
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
		☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

Meeting 3A – April 14th, 2015

IEMA Multi-Hazard Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 3A
Chairman: Steve Lueker
Plan Directors: Southern Illinois University and Greater Egypt Region Planning and Development Commission

Meeting Date: April 14th, 2015

Meeting Time: 10:00am

Place: Good Samaritan Regional Health Center, 1 Good Samaritan Way, Mount Vernon, IL

Planning Team/Attendance: 15

Developing Mitigation Strategies

The meeting is called to order.

Amanda Damptz opened the meeting by explaining that the planning team is here today to update the 2009 Jefferson County Multi-Hazard Mitigation Plan. She introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: the current status of the mitigation planning efforts, FEMA's Hazard Mitigation Assistance Program, Hazard Mitigation Ideas and other potential funding sources.

During the PowerPoint, Ms. Damptz explained that regionally Southern Illinois has received $87 million in Hazard Mitigation Assistance Grants as a result of the Hazard Mitigation Planning Efforts. A few examples include: Jackson County's Reed Station Mobile Home Acquisition, SIH's Seismic Retrofit, Creal Springs School Hardening, Rend Lake Water Main Bypass, and West Frankfort Treatment Plant Relocation.

In addition to FEMA's HMA program, there are several granting agencies the County and its municipalities can investigate to help offset the cost of future hazard mitigation projects. A few examples include: USDA Rural Development Grants, Illinois Department of Commerce and Economic Opportunity, and Illinois Dept. of Natural Resources.

Finally, the County and its municipalities broke out into their respective groups to develop mitigation strategies specific to their jurisdiction. SIU will gather the information and compile it into the plan draft. At the next meeting, the planning team will be able to review and make any changes necessary to the listed mitigation strategies.

Meeting was adjourned.

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Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
618-819-2005 Robin Jones	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Emergency Prep Coordinator	St Mary's Good Samaritan	Ø
Amanda Damptz 314-7825	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Rescuer	SIU	Ø
Eddie Joe Marks 618-242-7587	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Jefferson Co Coroner	Jefferson County	
Keith Hertenstein 618-316-3072	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	ICEMA Assistant Coordinator	ICEMA	
Steve Lueker	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	County Coordinator	ICEMA	
Tyler Carpenter	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	~~Emergency Mgmt~~ Regional Planner	Greater Egypt	
MICHAEL BULLARD	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	PRESIDENT	VILLAGE OF BELVIDERE	20

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Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Dr. Brad Drake 618-735-8656	☒ As a Public Employee ☒ As a Private Employee ☒ As an Interested Citizen	Deputy Coroner	Self	
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

(April 14, 2015)

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Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
[illegible]	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Owner Litton Auto Lane		
Mary Ellen Beahtel	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Asst. City Manager	City of Mt. Vernon	
Randy Tepovich	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Waltonville Water + Sewer Operator	Village of Waltonville	
Kevin Sargent	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Mt. Vernon EMA/Fire	Mt. Vernon	
Lindsay Smith	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Admin. Asst.	JCHD	4
Mark Stevens	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Public Health Administrator	JCHD	4
Mary Jane Chesley	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	City of Mt Vernon-Mayor	Mt. Vernon	

(April 14, 2015)

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Meeting 3B – June 9th, 2015

IEMA Multi-Hazard Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 3B
Chairman: Steve Lueker
Plan Directors: Southern Illinois University and Greater Egypt Regional Planning and Development Commission

Meeting Date: June 9th, 2015

Meeting Time: 10:00am

Place: Rolland Lewis Building, 800 S 27th St, Mt Vernon, IL

Planning Team/Attendance: 16

Developing Mitigation Strategies

The meeting is called to order.

Amanda Damptz opened the meeting by explaining that the planning team is here today to update the 2009 Jefferson County Multi-Hazard Mitigation Plan. She introduced the planning partners: Southern Illinois University and Greater Egypt Regional Planning and Development Commission. A PowerPoint presentation was present that included: the current status of the mitigation planning efforts, FEMA's Hazard Mitigation Assistance Program, Hazard Mitigation Ideas and other potential funding sources.

During the PowerPoint, Ms. Damptz explained that regionally Southern Illinois has received $87 million in Hazard Mitigation Assistance Grants as a result of the Hazard Mitigation Planning Efforts. A few examples include: Jackson County's Reed Station Mobile Home Acquisition, SIH's Seismic Retrofit, Creal Springs School Hardening, Rend Lake Water Main Bypass, and West Frankfort Treatment Plant Relocation.

In addition to FEMA's HMA program, there are several granting agencies the County and its municipalities can investigate to help offset the cost of future hazard mitigation projects. A few examples include: USDA Rural Development Grants, Illinois Department of Commerce and Economic Opportunity, and Illinois Dept. of Natural Resources.

Finally, the County and its municipalities broke out into their respective groups to develop mitigation strategies specific to their jurisdiction. SIU will gather the information and compile it into the plan draft. At the next meeting, the planning team will be able to review and make any changes necessary to the listed mitigation strategies.

Meeting was adjourned.

3000 West DeYoung Street · Suite 800B-3 · Marion, IL 62959 · Phone: 618.997.9351 · Fax: 618.997.9354 · www.greateregypt.org

Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Please print clearly

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Keith Hertenstein khertenstein@gmail.com	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	JCEMA Assistant Coordinator	JCEMA	13.4
Steve Lueker slueker@jeffco.us	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	JCEMA County Emergency Director	JCEMA	11.00
Tyler Carpenter	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Planner	Greater Egypt	-
Amanda Damptz	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Research II	SIU	—
Renee Thomason rthomason@farmingtonrg1.org	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Secretary	Farmington CSD #98	
Janice Gallagan janicegallaghi@gmail.com	☐ As a Public Employee ☐ As a Private Employee ☑ As an Interested Citizen	Admin. Rep. Volunteer	L.E.P.C. Shawnee Parish	4.0
Chris McGhee	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Fire Chief	Sesser Fire Dist	36

(June 9, 2015)

Page 1

Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
Robert White 618-244.8000 ext 2	☐ As a Public Employee ☑ As a Private Employee ☐ As an Interested Citizen	Chairman	Jefferson County	7
Ron Daniels 618-244-8040	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Regional Superintendent of School	State of Illinois	–
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			
	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen			

Jefferson County Multi-Hazard Mitigation Planning Meeting 3 Attendance

Name and Contact Information (email or phone)	Your Reason for Attending (check only ONE box)	Job Title(s)	Employer(s)	Roundtrip Mileage to attend this meeting
THAD STALEY newc@MVN.NET	☑ As a Public Employee ☐ As a Private Employee ☐ As an interested Citizen	OPERATIONS Manage	NORTHEAST MT. VERNON WATER CO	1
James R Hartenstein wrgk jim@charter.net	☐ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Rep	Northeast Water	1
Craig Kujawa ckujawa@bethelschool.net	☒ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Superintendent	Bethel Grade School District #82	6
Bruce Barkau bbarkau@tricountycoop.com	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Dir of Mbr. Sv	Tri-County Elect	2
Dan Boehmer ceo@compconnect.org	☐ As a Public Employee ☒ As a Private Employee ☐ As an Interested Citizen	Exec. Dir	Jefferson Co Comprehensive Svcs	6
Jonathon Hallberg executivedirector@jeffcoda.org	☐ As a Public Employee ☑ As a Private Employee ☐ As an Interested Citizen	" "	Jefferson Co. Dev't. Corp.	6
Jennings Carter jcarter@kaskaskia.edu	☑ As a Public Employee ☐ As a Private Employee ☐ As an Interested Citizen	Physical Plant director	Kaskaskia College	40

Meeting 4 – Month Date, 2015

Disaster Risk Reduction Steering Committee Meeting – January 21st, 2015

Southern Illinois
Disaster Risk Reduction Steering Committee
Agenda
January 21, 2015 at 1:30
Jackson County Health Department

I. Welcome and introductions

II. Review updated plan of action and determine next steps

III. Announcements/Sharing of related work

IV. Next steps and next meeting date

Disaster Risk Reduction Steering Committee
January 21, 2015

SIGN IN SHEET

Name	Agency	Email	Sign
Craig Anz	SIU	canz@siu.edu	
Stephanie ~~Bell~~ Martin	Randolph County Health Department	sbell@randolphco.org	
Randolph Burnside	SIU	burnside@siu.edu	
Tyler Carpenter	Greater Egypt Regional Planning & Dev. Commission	tylercarpenter@greateregypt.org	
Amanda Damptz	SIU	adamptz@siu.edu	
Christina Frymire	Heartland Regional Medical Center	Christina_frymire@chs.net	
Terry Fulk	Jackson County Health Department	terryf@jchdonline.org	
Kevin Gillespie	IDPH	Kevin.gillespie@illinois.gov	
Bart Hagston	Jackson County Health Department	barth@jchdonline.org	
Beau Henson	Greater Egypt Regional Planning & Dev. Commission	beauhenson@greateregypt.org	
Ronda Koch	Franklin-Williamson Bi-County Health Department	rkoch@bicountyhealth.org	
Peter Lemish	SIU	peterlemish@siu.edu	
Miriam Link-Mullison	Jackson County Health Department	miriam@jchdonline.org	
Mike Maddox	Memorial Hospital of Carbondale	Mike.maddox@sih.net	
Dhitinut Ratnapridipa	SIU	dhitinut@siu.edu	
Yvonne Vieregge	Randolph County Health Department	yvieregge@randolphco.org	
Toni Hayden	United Way of SI	toni.unitedway@mchsi.com	
Mack Stevens	Jefferson co Health	MStevens@jchdil.org	
Mary O'Hara	Carbondale MyN	maryohara@mchsi.com	

Disaster Risk Reduction Steering Committee Meeting – February 18th, 2015

Southern Illinois
Disaster Risk Reduction Steering Committee
Agenda
February 18, 2015 at 1:30pm
Jackson County Health Department

I. Welcome and introductions

II. Announcements/Sharing of related work

III. Review updated plan of action and determine next steps

IV. Next meeting date

DRR Steering Committee
February 18, 2015
SIGN IN SHEET

NAME	AGENCY	PHONE	E-MAIL ADDRESS
Terry Falk	JC Health		terryf@jchdonline.org
Yvonne Vieregge	RC HD		Yvieregge@randolph.com
Kevin Gillespie	IDPH		Kevin.gillespie@illinois.gov
DT Rathman	SIU		dtrathman@siu.edu
Amanda Dampt2	SIU		adampt2@siu.edu
Peter Kiolish	SIU		pkiolish@siu.edu
Randy Burnside	SIU		Burnside@siu.edu
Toni Hayden	United Way		toni.unitedway@mchsi.com
Emma James	SIU		emma.james@siu.edu

Disaster Risk Reduction Steering Committee Meeting – March 18th, 2015

Southern Illinois
Disaster Risk Reduction Steering Committee
Agenda
March 18, 2015 at 1:30pm
Jackson County Health Department

I. Welcome and introductions

II. Announcements/Upcoming Events

III. Increasing participation in mitigation planning

IV. List of agencies serving vulnerable populations

V. Communication Plan

VI. Next Meeting – April 15

Disaster Risk Reduction Steering Committee
March 18, 2015

SIGN IN SHEET

Name	Agency	Sign
Craig Anz	SIU	
Stephanie ~~Bell~~ Martin	Randolph County Health Department	
Randolph Burnside	SIU	
Tyler Carpenter	Greater Egypt Regional Planning & Dev. Commission	
Amanda Damptz	SIU	
Christina Frymire	Heartland Regional Medical Center	
Terry Fulk	Jackson County Health Department	
Kevin Gillespie	IDPH	
Toni Hayden	United Way	
Bart Hagston	Jackson County Health Department	
Beau Henson	Greater Egypt Regional Planning & Dev. Commission	
Ronda Koch	Franklin-Williamson Bi-County Health Department	
Peter Lemish	SIU	
Miriam Link-Mullison	Jackson County Health Department	
Mike Maddox	Memorial Hospital of Carbondale	
Mary O'Hara		
Dhitinut Ratnapridipa	SIU	
Mark Stevens	Jefferson Co Health Dept	
Yvonne Vieregge	Randolph County Health Department	
Emma James	SIU	
Tracy Walker	Southern 7 HD	
Mary O'Hara	MY	

Jefferson County Board Meeting – March 23rd, 2015

The Jefferson County Board met in **Regular Session** on Monday, **March 23, 2015**, in the Jefferson County Board Room, located in the lower level of the County Courthouse.

Chairman Robert White called the meeting to order at 7:00 p.m.

County Clerk Connie Simmons called the roll:
Board Members present: Steve Draege, Joey McDermott (arrived 7:06 p.m.), Tommy Hayes, Randy Edwards, Jeff Williams, Justin Fulkerson, Cliff Lindemann, Bob Watt, Joyce Damron, Wayne Hicks, James Malone, and Robert White (12)
Board Members absent: John Keele (1)

The invocation was given by Watt, followed by the Pledge of Allegiance led by White.

Motion by Watt seconded by Lindemann to move Item 11 - EMA Multi Hazard Mitigation Plan before Public Input.
Voice vote. Motion Carried. (11 aye - 0 nay - 0 abstain)

Steve Lueker , Jefferson County EMA Coordinator, and Keith Hertenstein discussed the draft of the Multi-Hazard Mitigation Plan that they are working on, hopefully to be finalized by this summer for approval. An attendance sheet was passed through the audience.

(Joey McDermott arrived at 7:06 p.m.)

Public Input

Jeff Haarmann spoke regarding the creation of the C. E. O. Program for all high schools in Jefferson County to be implemented 2016-2017 school year. This program helps students start and run a business. Rend Lake College has also partnered with them.

Mike Bullard, representing the Mayors and Commissioners of the municipalities of Jefferson County, requested the Board adopt a resolution in opposition of the privatization of water.

Jere Shaw spoke regarding the RLCD contract with the City of Mt. Vernon and whether they have the right to assign the contract.

Ryan Weeks, John Kemp, and Cindy Draege spoke in favor of the Public Safety Sales Tax. Dan Black, Jere Shaw, Bob Shaw and Calvin McClintock spoke against the Public Safety Sales Tax.

Board Member & Chairman comments

A straw pole of the Board Members showed that the majority would support an abatement of the County General Corporate property tax if the Public Safety Tax proves to have "excess" funds. Other suggestions were to put any excess toward paying off the Justice Center and repairs.

Jefferson County Hazard Mitigation Plan

Jefferson County Board Meeting—March 23, 2015 ***(Non Board Members)***

Name	
Keith Hertenstein	Keith Hertenstein
Steve Lueker	Steve Lueker
Marsha Lueker	Marsha Lueker
James Robinson	James Robinson
Mike Bullard	Mike Bullard
Daniel Knox	Daniel Knox
Robert Shaw	Robert Shaw
Jere T. Shaw	Jere Shaw
Mallory Adams	Mallory Adams
Jeremy Miller	Jeremy Miller
Brent Daniels	Brent Daniels
Clint Taylor	Clint Taylor
Travis Allen	Travis Allen
John Kemp	John Kemp
Gary William	Gary William
Travis Settles	Travis Settles
Jeremy Wilton	Jeremy Wilton
Ryan Weeks	Ryan Weeks
Nancy Burrell	Nancy Burrell
Pattie Wease	Pattie Wease
JEFF HAARMANN	Jeff Haarmann
ROB WIELT	Rob Wielt
Dan Black	Dan Black
Dotti Black	Dotti Black
Cindy Draege	Cindy Draege
	Doug Hoffman

Appendix B. Local Press Release and Newspaper Articles

THE SENTINEL • WEDNESDAY, DECEMBER 24, 2014

JEFFERSON COUNTY ETCHINGS

Jacob Hunsell Benefit meeting

NASON — A pre-benefit meeting for the Jacob Hunsell Benefit will be held at 2 p.m. Saturday at Bubba's in Nason. All are welcome to attend.

MHMP Steering Committee meeting

MT. VERNON — The Jefferson County Multi-Hazard Mitigation Plan (MHMP) Steering Committee will host a public information meeting at 6 p.m. Jan. 6 at the Rolland W. Lewis Community Building in Mt. Vernon. Through a grant funded by FEMA, the county has formed an alliance with Southern Illinois University and the Greater Egypt Regional Planning and Development Commission to identify potential natural hazards and produce an update to the 2009 MHMP. The public is invited to attend this meeting to learn about the MHMP process and provide input regarding natural hazards that occur in Jefferson County.

Registration violation

MT. VERNON — Janella Foulks, 30, of Mt. Vernon was arrested at 8:29 a.m. Monday for violent offender youth registration violation. No bond has been listed.

$10,000 bond

MT. VERNON — Gregory Bullard, 40, of Bluford was arrested at 1:36 p.m. Monday for a Class B violation of bail bond. Bond was set at $10,000.

$1,500 bond

MT. VERNON — Anthony Finney, 21, of Mt. Vernon was arrested at 7:52 p.m. Monday for driving on a suspended license. Bond was set at $1,500.

Driving on suspended license

MT. VERNON — Jasmine Gonzalez, 19, of Mt. Vernon was arrested at 9:54 p.m. Monday for driving on a suspended license. Bond has not been listed.

Woodlawn woman arrested

WOODLAWN — Patricia Toth, 34, of Woodlawn was arrested at 1:40 a.m. Tuesday for driving on a suspended license. Bond has not been listed.

Drug charges

MT. VERNON — John Berlin, 32, of Coulterville was arrested at 3:51 a.m. Tuesday for possession of a controlled substance and possession of drug paraphernalia. Bond has not been listed.

Theft

MT. VERNON — A report of a male subject trying to steal copper from the ground was made at 8:28 a.m. Monday in the 2600 block of Richview Road.

Theft of services

MT. VERNON — A theft of services in the amount of $35 was reported at 6:34 p.m. Monday in the 1700 block of South 10th Street.

Home invasion

MT. VERNON — A report made at 5:10 p.m. Monday indicated that a male subject entered an individual's home and battered the resident and cut him with a knife.

Mt. Vernon Register News Mt. Vernon Register News (0-mtv_20141212_2a_w-or9.pdf.0)
12/12/2014 Obituaries Page A02

BULLETIN BOARD

Benefit set

A benefit will be held in honor of the late Jeff Miller, Brent Hahn and Jacob Hunsel on Saturday at the Eagles Lodge in Mt. Vernon.

A pancake and sausage breakfast will be held at 9 a.m. A cake walk will be held following breakfast and music will be provided from 3 p.m. until 2 a.m. A disc jockey will play music starting at 10 a.m. There will also be an evening meal, for $7 each, starting at 5 p.m.

Musical performances will be provided by, in the order in which they will perform are: Del Rio Trio, Triple Threat, No Issues, Meghan Barrow, Beatle Brothers and Eye of the Needle.

Raffle items will be available and door prizes will be awarded.

Committee set to meet

The Jefferson County Multi-Mitigation Plan Steering Committee will host a public information meeting 6 p.m. Jan. 6, at the Rolland W. Lewis Community Building.

The county has formed an alliance with SIU and the Greater Egypt Regional Planning and Development Commission through a grant funded by FEMA to identify potential natural hazards and produce an update to the 2009 MHMP.

The public is invited to this meeting to learn more about the MHMP process and provide input regarding natural hazards that occur in Jefferson County.

Additional information is available at http://jcema.mvn.net.

Special council meeting called

The City Council of Nason will hold a special meeting 7 p.m. Monday, Dec. 15, at City Hall in Nason. The purpose of the meeting is to discuss the EPA contract for the Nason water system.

December 15, 2014 Powered by TECNAVIA Copyright (c)2014 Mt. Vernon Register News, Edition 12/12/2014 4:18 pm

Appendix C. Adopting Resolutions

See Attached Adopting Resolutions

Appendix D. Historical Hazards

See Attached Large Format Map and Newspaper Clippings

Appendix E. List of Essential Facilities

Not all data is available for every facility. Other facility specifics may be available upon request.

Emergency Operations Center Facilities

Facility Name	Address	City	Comments
Jefferson County Courthouse	100 South 10th St	Mount Vernon	Jefferson County EOC
Jefferson County Sheriff's Office	911 Casey	Mount Vernon	Jefferson County EOC
Mount Vernon Police Department	211 North 10th St	Mount Vernon	Mount Vernon EMA EOC

Fire Station Facilities

Facility Name	Address	City	Comments
Belle Rive Fire Dept.	102 S Hickory	Belle Rive	ISO 10; 9 Employees
Jefferson Fire Protection District – Station 1	1600 S 10th	Mount Vernon	ISO 6/9; 26 Employees
Jefferson Fire Protection District – Station 2	298 N Main	Dix	ISO 6/9; 2 Employees
Jefferson Fire Protection District – Station 3	303 W Third	Ina	ISO 6/9; 4 Employees
Jefferson Fire Protection District – Station 4	9083 N Hottenson	Opdyke	ISO 6/9; 2 Employees
Mt. Vernon Fire Dept. – Station 1	1100 S Main Street	Mount Vernon	ISO 3; 9 Employees
Mt. Vernon Fire Dept. – Station 2	2623 Logan Ave	Mount Vernon	ISO 3; 6 Employees
Mt. Vernon Fire Dept. – Station 3	1111 Airport Rd	Mount Vernon	ISO 3; 6 Employees
Mt. Vernon Fire Dept. – Station 4	714 S 42nd Street	Mount Vernon	ISO 3; 10 Employees
Waltonville Volunteer Fire Department	406 S Broadway	Waltonville	ISO 9; 20 Employees
Webber Township Fire Protection District	501 N Parker	Bluford	ISO 9; 18 Employees
Woodlawn Fire District	202 S Central	Woodlawn	ISO 9; 21 Employees

Police Station Facilities

Facility Name	Address	City	Comments
Jefferson County Sheriff	911 Casey Ave	Mount Vernon	Backup power
Mount Vernon Police Department	211 N 10th St	Mount Vernon	Backup power; EOC
Ina Police Department	306 South Elm Street	Ina	
Rend Lake College Police Department	468 N Ken Grey Parkway	Ina	Backup power

School Facilities

Facility Name	Address	City	Comments
Grand Prairie School	21462 N Richview Ln	Centralia	Kindergarden-8th Grade; 78 Students
Rome CCSD #2	233 W South Street	Dix	Preschool-8th Grade; 340 Students
Field Grade	21075 N Hails Ln	Texico	Preschool-8th Grade; 315 Students
Woodlawn High	300 N Central	Woodlawn	9th Grade-12th Grade; 210 Students
Woodlawn Grade	301 S Central	Woodlawn	Preschool-8th Grade; 351 Students
Farrington Grade	20941 E Divide Rd	Bluford	Kindergraden-8th Grade; 64 Students
Bluford	901 Sixth Street	Bluford	Preschool-12th Grade; 450 Students
Opdyke-Belle Rive CCSD #5	19380 E Fourth Street	Opdyke	Kindergarden-8th Grade; 208 Students
Spring Garden Middle School	511 S Elm	Ina	4-8th Grade; 107 Students
Waltonville Grade (cusd #1)	804 W Knob	Waltonville	Preschool-8th Grade; 264 Students
Waltonville High (cusd #1)	804 W Knob	Waltonville	9th Grade-12th Grade; 104 Students
McClellan Grade	9475 North Il Hwy 148	Mount Vernon	Kindergarden-8th Grade; 61 Students
Spring Garden Elementary School	14975 East Bakerville Rd	Mount Vernon	Kindergarden-3th Grade; 131 Students
Bethel Grade	1201 Bethel Rd	Mount Vernon	Preschool-8th Grade; 184 Students
Mt Vernon Christian School	817 Woodland Dr	Mount Vernon	Kindergarden-12th Grade; 50 Students
Mt Vernon Alternative, Safe & Pre-Kindergarten	2300 Benton Rd	Mount Vernon	ROE; 50 Students
J L Buford Intermediate Education Center	623 South 34th Street	Mount Vernon	4th Grade-5th Grade; 263 Students
District 80 Primary Center	401 North 30th Street	Mount Vernon	Kindergarden-3rd Grade; 678 Students
Zadok Casey Middle School	1829 Broadway	Mount Vernon	6th Grade-8th Grade; 459 Students
Dr Andy Hall Early Childhood Center	301 South 17th Street	Mount Vernon	Preschool-Kindergarten; 320 Students
St. Mary's Parochial School	1416 Main Street	Mount Vernon	Kindergarden-8th Grade; 144 Students
Mt Vernon High School	320 South Seventh Street	Mount Vernon	9th Grade-12th Grade; 1,275 Students
Summersville CCSD #79	1118 East Fairfield Rd	Mount Vernon	Kindergraden-8th Grade; 290 Students
Goshen Trail School	18943 E Highland Road	Belle Rive	

Facility Name	Address	City	Comments
Lighthouse Mennonite Church	E Il Hwy 15	Bluford	
Victory Christian Academy	1719 Broadway	Mount Vernon	Kindergarden-12th Grade; 18 Students
United Methodist Children's Home	2023 Richview Rd	Mount Vernon	Quest & Transitional; 30 Students
Rend Lake College	468 N Ken Gray Parkway	Ina	Main Campus; 3815 Students
Rend Lake Marketplace	200 Outlet Ave	Mount Vernon	Rend Lake College
Oakland Education Center	1722 Oakland Ave	Mount Vernon	10 Students

Medical Care Facilities

Facility Name	Address	City	Comments
Comprehensive Connections	16338 N. Illinois Hwy 37	Mount Vernon	Mental Health, Substance Abuse, and Vocational Services
Jefferson County Health Department	1 Doctor Park Road	Mount Vernon	
Crossroads Community Hospital	8 Doctors Park Rd	Mount Vernon	Beds - 47
SSM Health Good Samaritan Hospital	1 Good Samaritan Way	Mount Vernon	Beds - 134
DaVita Dialysis	4102 North Water Tower Pl	Mount Vernon	16 Stations
Countryside Manor	606 IL-15	Mount Vernon	Nursing Home; Capacity - 101 Residents
White Oak Rehabilitation & Health Care Center	1700 White St	Mount Vernon	Nursing Home
Mt Vernon Health Care Center	5 Doctors Park Rd	Mount Vernon	Nursing Home
Nature Trail Healthcare Center	1001 S 34th St	Mount Vernon	Nursing Home
Oak Terrace	4219 Lincolnshire Dr	Mount Vernon	Nursing Home
Sutton House	4241 Lincolnshire Dr	Mount Vernon	Nursing Home

Appendix F. Critical Facilities Map

See Attached Large Format Map of Critical Facilities.