Hazard Mitigation Plan

Jefferson County, Illinois

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Table of Contents

Section 1 - Public Planning Process

1.1 Narrative Description

Hazard Mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting 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 a requirement 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.

The Greater Egypt Regional Planning Commission was established in 1961 to "Provide a plan for the general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the Franklin, Jackson, Perry, and Williamson County region, and of public improvement and utilities therein for the purpose of best promoting health, safety, morals, order, convenience, prosperity, efficiency and economy in the process of development and the general welfare of said region." In 1967, Jefferson County was added to the Greater Egypt Region. The Commission was re-established as Greater Egypt Regional Planning & Development Commission (GERPDC). The Commission, Jefferson County Emergency Management Agency, SIU-C Geology Department, The Polis Center of IUPUI, and Jefferson County have joined efforts in the creation of this mitigation plan, realizing that the recognition of and the protection from hazards that impact the county and its residents contribute to future community and economic development.

In recognition of the importance of planning in mitigation activities, FEMA has created HAZUS-MH (**Haz**ards **US**A **M**ulti-**H**azard) a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to predict the estimated losses from floods, hurricanes, earthquakes, and other related phenomena 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 in Illinois. Southern Illinois University at Carbondale (SIU-C) and The Polis Center at Indiana University-Purdue University Indianapolis (IUPUI) are assisting Jefferson County planning staff with performing the hazard risk assessment.

1.2 Planning Team Information

The Jefferson County Multi-Hazard Mitigation Planning Team is headed by Benton Fitzjerrells, who is the primary point of contact. Members of the planning team include jurisdictions within the county and state representatives. Table 1-1 identifies the planning team individuals and the organizations they represent.

Table 1-1: Multi-Hazard Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Delmar Shorb	Trustee	Village of Belle Rive	Belle Rive
Donnie Wilkey	President	Village of Belle Rive	Belle Rive
James Parkhill	Operations Manager	Bluford Water Gas Sewer	Bluford
Benton Fitzjerrells	Coordinator	Jefferson County EMA/ESDA	Jefferson County
Brian Beaty	Lieutenant	Jefferson Fire Protection District	Jefferson County
Mark Stevens	Public Health Administration	Jefferson County Health Dept.	Jefferson County
Marty Schwartz	Major	Jefferson County Sheriff's Office	Jefferson County
Mary Ellen Bechtel	Executive Director	Jefferson County Development	Jefferson County
Robert Beal	Captain	Jefferson Fire Protection District	Jefferson County
Robert Hyman	EMS Coordinator	St. Mary's Good Samaritan	Jefferson County
Roger Mulch	Sheriff	Jefferson County Sheriff's Office	Jefferson County
Stan Drennan	Engineer	Jefferson County Hwy Dept.	Jefferson County
Steve Damron	County Board	Jefferson County Board	Jefferson County
Steve Lueker	Chief Supervisor of Assessments	Jefferson County Supervisor of Assessments Office	Jefferson County
Steve Schnake	Engineer	Jefferson County Hwy Dept.	Jefferson County
Steven Draege	Officer	Jefferson County's Sheriff's Dept.	Jefferson County
Ted Buck	Chairman	Jefferson County Board	Jefferson County
Terry Jones		Jefferson County ESDA	Jefferson County
Wayne Hails	Board Member	Jefferson County Board	Jefferson County
Alan Troutt	City Public Utilities	City of Mt. Vernon	Mt. Vernon
Charlie Bruce	Administrator	Crossroads Hospital	Mt. Vernon
Chris Mendenall	Chief	City of Mt. Vernon Police	Mt. Vernon
Don Bigham		Baptist Disaster Relief	Mt. Vernon
Kevin Sargent	Mt. Vernon Emergency Management/Mt. Vernon Fire Dept.	City of Mt. Vernon Fire Dept.	Mt. Vernon
Mary Jane Chesley	Mayor	City of Mt. Vernon	Mt. Vernon
Mike Shannon	Fleet Director	City of Mt. Vernon	Mt. Vernon
David Coggins	Mayor	City of Nason	Nason
Ginger Droste	City Clerk	City of Nason	Nason
Jackie Dent	Former Mayor	City of Nason	Nason
Bruce Barkau	Director of Member Services	Tri-County Electric	Region
Rich Dial	Manager	Ameren	Region
Brad Peterson	Board Member	Waltonville Village Board	Waltonville
Chloe Dulaney	Fireman	Waltonville Fire Dept.	Waltonville
Ed Dulaney	Fireman	Waltonville Fire Dept.	Waltonville
Randy Tepovich	Manager	Waltonville Water Dept.	Waltonville
Bill Shega	Assistant Chief	Woodlawn Village Board/Woodlawn Fire Protection District	Woodlawn
Joe Eckelberry	Trustee	Village of Woodlawn/Woodlawn Fire Dept.	Woodlawn

The Disaster Mitigation Act (DMA) planning regulations and guidance stress that planning team members must be active participants. The Jefferson County MHMP committee members were actively involved on the following components:

- Attending the MHMP meetings
- Providing available Geographic Information System (GIS) 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

An MHMP introductory meeting was held at SIU-C on March 19, 2008. Representatives of Franklin, Jackson, Jefferson, Perry, and Williamson Counties attended the meeting. John Buechler, MHMP Project Manager of The Polis Center, and Nicholas Pinter, SIU-C Geology Department, explained the motive behind the MHMP program and answered questions from the participants. Nicholas Pinter, Andy Flor, and Harvey Henson from SIU-C provided an introduction to hazards, and John Buechler and Dave Coats from The Polis Center provided an overview of HAZUS-MH. John Buechler described the timeline and the procedures to take place throughout the planning project. Shortly after the meeting, in response to many concerns of the security and limited use of the counties' GIS data, a Memorandum of Understanding (MOU) was created and signed by each county chairman.

The county board chairmen met with representatives from GERPDC, SIU-C, and The Polis Center on March 19, 2008, to discuss the planning process and prospective planning team members. The county Multi-Hazard Mitigation Planning Team met on August 15, 2008, October 10, 2008, December 18, 2008, January 23, 2009, and April 13, 2009. These meetings were held in the Municipal Building Annex West and the Jefferson County Courthouse in Mount Vernon, Illinois. Each meeting was approximately two hours in length. The meeting minutes are included in Appendix A. 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, and assisted with preparation of the public participation information.

1.3 Public Involvement in Planning Process

The planning process commenced on January 29, 2008, when Southern Illinois University-Carbondale held a news conference to advise the general public that FEMA had approved funding of proposed planning activities for natural disaster preparedness. It was explained that the university would collaborate with members of The Polis Center as well as the five regional planning commissions. The news conference was attended by representatives of the local papers, radio, and television.

Jefferson County conducted presentations for the public to give an overview of the planning process, inform them of the benefits of completing the plan, and discussed natural hazards affecting Jefferson County. A public meeting was held on December 18, 2008. Appendix A contains the minutes from the public meeting. Appendix B contains articles published by the local newspaper throughout the public input process.

1.4 Neighboring Community Involvement

The Jefferson County planning team invited participation from various representatives of neighboring counties, local cities, and town governments. The initial planning meeting at SIU-C on March 19, 2008 included representatives from the adjacent GERPDC counties of Franklin, Jackson, Jefferson, Perry, and Williamson. In the meeting, the county board chairmen and their EMA directors discussed creating county planning teams, scheduling meetings throughout the

planning process, and ways to ensure public involvement in the plan. The county board chairmen also agreed to allow university research staff to have access to county GIS programs and data from the supervisor of the assessment.

Jefferson County is bounded by Franklin and Perry Counties. Franklin County, located to the south of Jefferson County, has working relationships and cooperation with Jefferson County through regional partnerships. The regional planning commission staff provides monthly status reports of each county's mitigation planning program to its commission, which is comprised of county and municipal representatives. Details of how neighboring stakeholders were involved are summarized in Table 1-2.

Table 1-2: Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Organization	Participation Description
John Evans	Jackson	County	Briefed on the plan and provided comments
Derek Misener	Jackson	County EMA	Briefed on the plan and provided comments
Randall Crocker	Franklin	County	Briefed on the plan and provided comments
James Epplin	Perry	County	Briefed on the plan and provided comments
Michael Richmond	Perry	County EMA	Briefed on the plan and provided comments
Brent Gentry	Williamson	County	Briefed on the plan and provided comments
Alan Gower	Williamson	County EMA	Briefed on the plan and provided comments

1.5 Review of Technical and Fiscal Resources

The MHMP planning team has identified representatives from key agencies to assist in the planning process. Technical data, reports, and studies were obtained from these agencies. The organizations and their contributions are summarized in Table 1-3.

Table 1-3: Key Agency Resources Provided

Agency Name	Resources Provided
Greater Egypt Regional Planning & Development Commission	Jefferson County Comprehensive Plan, Mount Vernon Transportation Plan, A Comprehensive Community Plan: Mount Vernon, Illinois, Big Muddy River Basin Interim Water Quality Management Plan (Draft) and Illinois County Estimates: Corn, Soybeans, and Wheat
Illinois Environmental Protection Agency	Illinois 2008 Section 303(d) Listed Waters and watershed maps
U.S. Census	County Profile Information such as Population and Physical Characteristics
Department of Commerce and Economic Opportunity	Community Profiles
Illinois Department of Employment Security	Industrial Employment by Sector
National Climatic Data Center	Climate Data
USDA/US Forest Service	Physical Characteristics
Illinois Emergency Management Agency	2007 Illinois Natural Hazard Mitigation Plan
Illinois State Geological Survey	Coal Mining Maps; Karst Areas; Geologic Data; Soils and Liquefaction Maps
United States Geological Survey	Physiographic/Hill Shade Map
Federal Emergency Management Agency and Illinois Water Survey	Digital Federal Flood Insurance Rate Maps
Center for Earthquake Research, University of Memphis	Earthquake Data
Jefferson County Assessors Office	Parcel Data, Assessed Values of Property, and County GIS Data

1.6 Review of Existing Plans

Jefferson County and its associated local communities utilized a variety of planning documents to direct community development. These documents include land use plans, master plans, emergency response plans, municipal ordinances, and building codes. The MHMP planning

process incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 1-4 lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 1-4: Planning Documents Used for MHMP Planning Process

Author(s)	Year	Title	Description	Where Used
Greater Egypt Regional Planning and Development Commission	1970	Jefferson County Comprehensive Plan	This study provides an inventory and description of resources which may be developed to provide a better economic base for the Region.	Jurisdiction Information and Topography
Greater Egypt Regional Planning and Development Commission	1971	Mount Vernon Transportation Plan	This study provides an analysis of population expansion; economic growth and land use; a systematic description of traffic pattern; and development of a transportation plan for the Mount Vernon area.	Jurisdiction Information and Topography
Metropolitan Planner, Inc. and General Planning and Resource Consultants	1963	A Comprehensive Community Plan: Mount Vernon, Illinois	This study contains an analysis of basic data, maps, and charts on existing population, economic base, land use, housing, traffic, business and community facilities as well as recommendations for a comprehensive plan.	Jurisdiction Information and Topography
National Agricultural Statistics Service	2006 – 2007	Illinois County Estimates: Corn, Soybeans, and Wheat	This release contains official estimates of acreage, yield and production of corn, soybeans and wheat for counties in Illinois.	Land use and development trends
Greater Egypt Regional Planning & Development Commission	1970-1990	The Comprehensive Plan for Dix (Rome), Illinois	This study provides information on the population, economic base, land use and housing, public facilities, central business district and transportation and circulation aspects of the city.	Zoning Ordinance and Land Use Plan
Greater Egypt Regional Planning & Development Commission	1970-1990	The Comprehensive Plan for Waltonville, Illinois	This study provides information on the population, economic base, land use and housing, public facilities, central business district and transportation and circulation aspects of the city.	Zoning Ordinance and Land Use Plan
State of Illinois Environmental Protection Agency	1973	Big Muddy River Basin Interim Water Quality Management Plan (Draft)	This study examines the Big Muddy River Basin. The analysis covers a description of the basin, demographics, economics, water supplies, water use, water quality, pollution sources, sewerage facilities, permits, surveillance, enforcement, operator certification, and environmental impact.	Jurisdiction Information and Topography
Illinois Emergency Management Agency	2007	Illinois Natural Hazard Mitigation Plan	The Illinois Natural Hazard Mitigation Plan (INHMP) establishes a process for identifying and mitigating the effects of natural hazards in the State of Illinois as required under the Disaster Mitigation Act of 2000.	Topography

Section 2 - Jurisdiction Participation Information

The jurisdictions included in this multi-jurisdictional plan are listed in Table 2-1. The City of Centralia has 120 acres of undeveloped industrial land located on the northwest corner of Jefferson County. At this time Centralia has elected to participate in the Marion County Multi-Hazard Mitigation Plan and has been omitted from this plan.

Table 2-1: Jurisdictions within the Planning Area

Jurisdiction Name
County of Jefferson
Village of Belle Rive
Village of Bluford
Village of Bonnie
Village of Dix (Rome)
Village of Ina
City of Mount Vernon
City of Nason
Village of Waltonville
Village of Woodlawn

2.1 Adoption by local governing body

The draft plan was made available to the planning team and other agencies such as county and municipal officials on April, 13, 2009, for review and comments. The Jefferson County Hazard Mitigation Planning Team presented and recommended the plan to Jefferson County Board, who adopted the Jefferson County Hazard Mitigation Plan on July 27, 2009. Resolution adoptions are included in Appendix C of this plan.

2.2 Jurisdiction Participation

It is required that each jurisdiction participates in the planning process. Table 2-2 lists each jurisdiction and how each participated in the construction of this plan.

Table 2-2: Jurisdiction Participation

Jurisdiction Name	Planning Team Member	Position	Organization	Planning Meetings					Number of Meetings Attended	Supplemental Meeting 4/3/2009	Total Number of Meeting Attended
				Meeting 1 8/15/2008	Meeting 2 10/10/2008	Meeting 3 12/18/2008	Meeting 4 1/22/2009	Meeting 5 4/3/2009			
Belle Rive	Delmar Shorb	Trustee	Belle Rive						0	X	1
	Donnie Wilkey	President	Belle Rive						0	X	1
Bluford	James Parkhill	Bluford Water, Gas, and Sewer	Bluford			X	X	X	3	X	4
Bonnie											0
Dix (Rome)	Benton Fitzjerrells *	Coordinator	Jefferson County EMA/ESDA/ Dix Citizen	X	X	X	X		4		4
Ina											0
Jefferson County	Benton Fitzjerrells *	Coordinator	Jefferson County EMA/ESDA/ Dix Resident	X	X	X	X		4		4
	Brian Beaty	Lieutenant	Jefferson Fire Protection District	X					1		1
	Bruce Barkau		Tri-Electric	X	X			X	3		3
	Dennis Litton		Jefferson EMA						0	X	1
	Mark Stevens	Public Health Administrator	Jefferson County Health Dept.	X	X		X	X	4		4
	Marty Schwartz	Major	Jefferson County Sheriff's Office	X					1		1
	Mary Ellen Bechtel	Executive Director	Jefferson County Development	X		X	X	X	4		4
	Rich Dial	Manager	Ameren	X					1		1
	Robert Beal	Captain	Jefferson Fire Protection District	X					1		1
	Robert Hyman	EMS Coordinator	St. Mary's Good Samaritan Hospital	X					1		1
	Roger Mulch	Sheriff	Jefferson County Sheriff's Office		X		X		2		2
	Stan Drennan	Engineer	Jefferson County Hwy Department			X	X		2		2
	Steve Damron	County Board	Jefferson County			X			1		1
	Steve Lueker	Chief Supervisor of Assessments	Supervisor of Assessments Office	X	X		X	X	4	X	5

* Benton Fitzjerrells represented both the City of Dix and Jefferson County.

Jurisdiction Name	Planning Team Member	Position	Organization	Planning Meetings					Number of Meetings Attended	Supplemental Meeting 4/3/2009	Total Number of Meeting Attended
				Meeting 1 8/15/2008	Meeting 2 10/10/2008	Meeting 3 12/18/2008	Meeting 4 1/22/2009	Meeting 5 4/3/2009			
Jefferson County	Steve Schnake	Engineer	Jefferson County Hwy Department	X			X		2		2
	Steven Draege	Officer	Jefferson County Sheriff's Office					X	1		1
	Ted Buck	Chairman	Jefferson County Board	X					1	X	2
	Terry Jones		Jefferson County ESDA				X		1		1
	Wayne Hails	Board Member	Jefferson County					X	1		1
Mt. Vernon	Alan Troutt	City Public Utilities	Mt. Vernon	X			X		2		2
	Charlie Bruce	Administrator	Crossroads Hospital	X			X	X	3		3
	Chris Mendenall	Chief	Mt. Vernon	X					1		1
	Don Bigham		Baptist Disaster Relief				X		1		1
	Kevin Sargent	Mt. Vernon EMA and Mt Vernon Fire Department	Mt. Vernon	X	X		X	X	4		4
	Mary Jane Chesley	Mayor	Mt. Vernon			X			1		1
	Mike Shannon	Fleet Director	Mt. Vernon	X	X	X	X	X	5		5
Nason	David Coggins	Mayor	Nason					X	1		1
	Ginger Droste	City Clerk	Nason						0	X	1
	Jackie Dent	Former Mayor	Nason					X	1	X	2
Waltonville	Brad Peterson	Board Member	Waltonville				X		1		1
	Chloe Dulaney	Fire Fighter	Waltonville				X		1		1
	Ed Dulaney	Fire Fighter	Waltonville				X		1		1
	Randy Tepovich	Manager	Waltonville Water Department				X		1		1
Woodlawn	Bill Shega	Assistant Chief	Woodlawn Fire Department			X		X	2		2
	Joe Eckelberry	Trustee	Village of Woodlawn			X	X		2	X	3

At each planning meeting, Greater Egypt Regional Planning & Development Commission Staff explained the importance of the multi-hazard mitigation plan for the county and for the participation from all communities. Despite the best efforts of the Greater Egypt Regional Planning & Development Commission to solicit participation from all incorporated communities in Jefferson County, the Villages of Bonnie and Ina did not participate in any of the meetings for the Jefferson County plan.

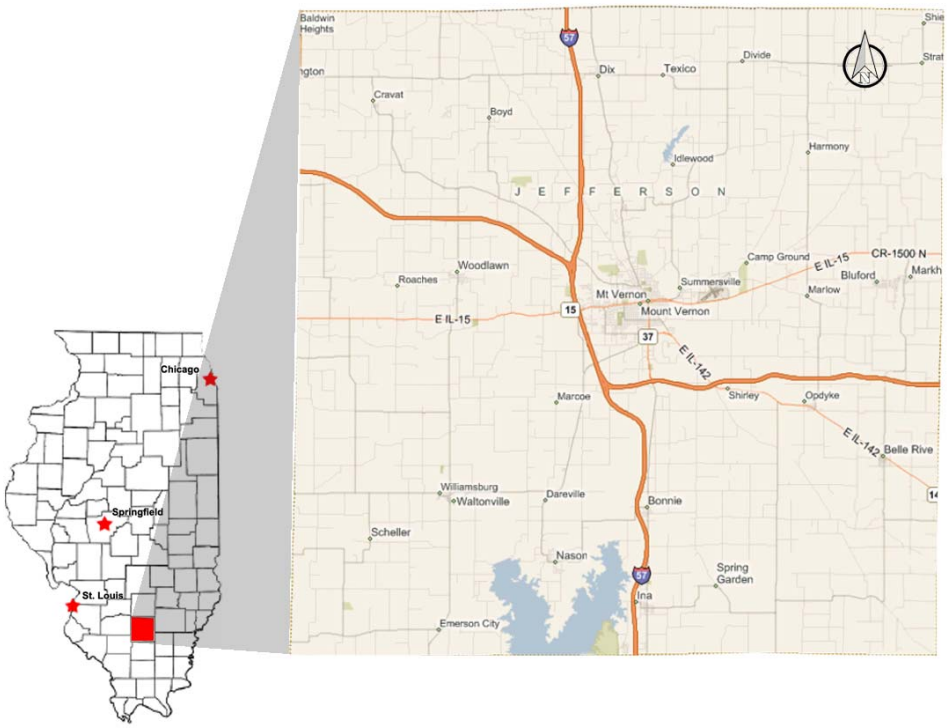
All members of the MHMP planning committee were actively involved in attending the MHMP meetings, providing available Geographic Information System (GIS) data and historical hazard information, reviewing and providing comments on the draft plans, coordinating and participating in the public input process, and coordinating the county's formal adoption of the plan. Each meeting culminated with an open forum to invite questions and input from the planning team members. Appendix A provides further description of the meetings, including dates.

Section 3 - Jurisdiction Information

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.

Jefferson County is located in the center of the southern tip 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. Figure 3-1 shows the location of Jefferson County.

Figure 3-1: Map of Jefferson County



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.

Jefferson exhibits steady growth in southern Illinois. The major sources of economic activity include manufacturing, education, health services, social services, and public administration. A few of the top private employers in the county include Continental Tire N.A. Inc, Walgreens Distribution Center, Anheuser Busch Products Distribution, and NAPA Distribution Center.

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 zoo 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 shared with 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.

Sources: John A. Wall, History of Jefferson County, Illinois, 1909, Pg. 1-3, 34-35,

Vogt, Ivers, & Associates, Mount Vernon Transportation Plan, 1963

Metropolitan Planners, Inc. and General Planning and Resource Consultants, A Comprehensive Community Plan: Mount Vernon, Illinois, 1963

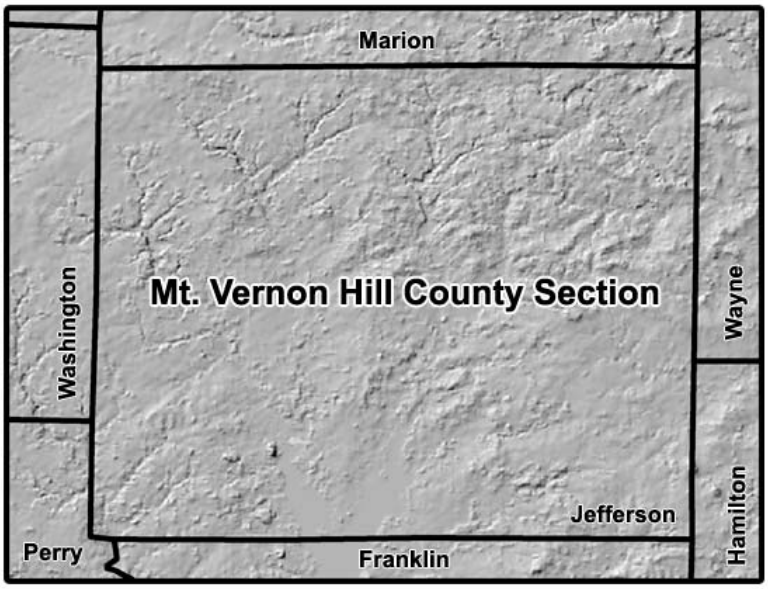
State of Illinois, Origin and Evolution of Illinois Counties, 1982

3.1 Physical Setting (Topography)

Jefferson County is located in the Mount Vernon Hill Country physiographic sub-division of the Till Plains. 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 3-2 depicts the physiographic division within Jefferson County and its characteristics.

Figure 3-2: Physiographic Divisions of Jefferson County



Physiographic/Hill Shade Map
Source: USGS

Sources: USDA and US Forest Service, Description of "Ecological Subregions: Sections of the Conterminous United States, http://www.na.fs.fed.us/sustainability/ecomap/provinces/sec_223/s223.shtm, 7-8-08

2007 Tiger Line Shape Files, US Census Geography Division, 2007, US Census Bureau, 28 May 2008, http://www.census.gov/geo/www/tiger/

United States Department of the Interior Geological Survey, Topographic Maps, 1961-1996

State of Illinois Environmental Protection Agency, Big Muddy River Basin Interim Water Quality Management Plan, 1973

3.2 Climate

Jefferson County's climate is typical of Southern Illinois and generally characterized by hot dry summers and cool wet winters. The variables of temperatures, 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 temperatures often occur and are sometimes accompanied by significant amounts of ice and snow.

3.3 Demographics

According to the US Census of 2007, Jefferson County has a population of 40,168. From 2000–2007, Jefferson County experienced a population increase of 0.3%. The largest incorporated area within the county is Mount Vernon, which has a population of approximately 16,319. Table 3-1 shows the population distribution within the incorporated areas of Jefferson County.

Table 3-1: Population by Community

Community	2007 Population	% of County
Village of Belle Rive	374	0.9%
Village of Bluford	765	1.9%
Village of Bonnie	421	1.1%
Village of Dix (Rome)	499	1.2%
Village of Ina	2,428	6.0%
City of Mount Vernon	16,319	40.6%
City of Nason	235	0.6%
Village of Waltonville	426	1.1%
Village of Woodlawn	638	1.6%
Rural Population	18,063	45.0%

Source: American FactFinder, 2008 and Illinois MapStats, 2008

3.4 Economy

Illinois MapStats and Illinois Department of Employment Security reported for 2007 that 78% of the workforce in Jefferson County was employed in the private sector. The breakdown is included in Table 3-2. Arts, Entertainment, Recreation, Accommodation, and Food Services represent the largest sector, employing approximately 15.7% of the workforce and generating approximately 17.5% of the earnings. The US Census 2007 annual per capita income (inflation adjusted) in Jefferson County was $20,215 compared to an Illinois average of $27,511.

Table 3-2: Industrial Employment by Sector

Industrial Sector	% of County Workforce (2007)
Agriculture, Forestry, Fishing, Hunting, and Mining	0.5%
Construction	3.0%
Manufacturing	15.4%
Wholesale Trade	3.9%
Retail Trade	10.8%
Transportation, Warehousing and Utilities	11.6%

Industrial Sector	% of County Workforce (2007)
Information	1.8%
Finance, Insurance, Real Estate, and Rental/Leasing	2.9%
Professional and Business Services	8.9%
Educational, Health, and Social Services	15.7%
Arts, Entertainment, Recreation, Accommodation and Food Services	9.0%
Other Services (except Public Administration)	2.1%
Public Administration	14.4%

Source: Illinois Department of Employment Security 2007 and Illinois MapStats, 2008

3.5 Industry

Jefferson County's major employers and number of employees are listed in Table 3-3. The largest employer is Continental Tire N.A. Inc, which was established in the early 1970s and currently employs approximately 2,000 employees. Walgreens Distribution Center is the second largest, with 1,500 employees.

Table 3-3: Major Employers

Manufacturing				
Company Name	**Location**	**Established**	**# of Employees**	**Type of Business**
Continental Tire N.A. Inc.	Mount Vernon	1973	2000	Tire manufacturer
National Railway	Mount Vernon	1998	200	Rail Engine Manufacturing
Mount Vernon Neon Sign	Mount Vernon	N/A	123	Commercial Signs
Retail Trade				
Wal-Mart	Mount Vernon		350	Food, Clothing, and Goods
Transportation, Warehousing and Utilities				
Walgreen's Distribution Center	Mount Vernon	1990	1500	Regional Distribution
Anheuser Busch Branded Products Distribution Center	Mount Vernon	1994	150	Distribution
Rend Lake Conservancy District	Benton	1965	85	Water Supply
Educational, Health, and Social Services				
St. Mary's Good Samaritan Inc	Mount Vernon	1944	930	Hospital
Crossroads Community Hospital	Mount Vernon	1982	320	Hospital
Mount Vernon Township High School	Mount Vernon	N/A	205	High School
Mount Vernon School District #80	Mount Vernon	N/A	201	Elementary School District
Rend Lake Community College	Ina	1966	500	Higher Education

Public Administration				
City of Mount Vernon	Mount Vernon	1819	178	Municipality Government
Jefferson County	Mount Vernon	1819	170	County Government

Source: Department of Commerce and Economic Opportunity, Community Profiles 2007; Jefferson County Development Company; and Direct Contact

3.6 Land Uses and Development Trends

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. Today, agriculture is the predominant land cover in the county. 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.

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. A subdivision plat has been slated in the area between 34th Street and along South Water Tower Drive, called Renaissance Hills Subdivision. EF Development Group LLC is planning to construct a mixed use of residential and office buildings in that area. Jefferson County Development Corporation is developing plans to construct disabled housing on LaSalle Street.

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 2008, Wal-Mart announced a $1.08 million remodeling project. The downtown area of Mt. Vernon continues with a streetscape renovation that is estimate to cost $625,000. Road construction began on the new 57/64 interchange and is estimated to be completed in 2009. The 57/64 interchange is expected to bring new amenities such as hotels, restaurants, and gas stations.

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, Walgreens, and Anheuser-Busch Branded Products Distribution Center. Mount Vernon most recently experienced an expansion with Continental Tire and a grand opening with Absolute Recycling.

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 southeastern portions of Moores Priarie Township and the southwestern portions of Elk Prairie and Bald Hill 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. Currently, Mount Vernon Outland Airport Authority has received funds for a fire station and has also located a growing aviation company and two aircraft dealerships. In 2007, IDOT announced the construction of a new interchange at interstate 57/64. The new interchange that will be extended from Veteran's Memorial Drive is anticipated to improve safety, ease congestion, and improve access in the heavily-traveled area.

Sources: National Agricultural Statistics Service, Illinois County Estimates: Corn, Soybeans, and Wheat, 2006-2007

IDOT, IDOT joins City of Mount Vernon and local leaders to break ground on new Interchange, 2007

Greater Egypt Regional Planning & Development Commission, Comprehensive Planning Study: Jefferson County, 1969

United States Department of the Interior Geological Survey, Topographic Maps, 1961-1996

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.

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).

Section 4 - Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on sound risk assessment. 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 of the community could be affected by a disaster, and the impact on community assets. A risk assessment consists of three components: hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification/Profile

4.1.1 Existing Plans

The plans identified in Table 1-3 did not contain a risk analysis. These local planning documents were reviewed to identify historical hazards and help identify risk. To facilitate the planning process, preliminary DFIRM maps were used for the flood analysis.

4.1.2 Planning Team

During Meeting #2, which occurred on October 10, 2008, the planning team developed and ranked a list of hazards that affect the county. The team reviewed historical hazards information as well as participated in a risk analysis using a projector and Excel spreadsheet. The team discussed each hazard and developed a consensus of the risk for each hazard.

4.1.3 National Hazard Records

In addition to these identified hazards, the MHMP planning committee reviewed the list of natural hazards prepared by FEMA. To assist the planning team, historical storm event data was compiled from the National Climatic Data Center (NCDC; http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll). This NCDC data included 293 reported events in Jefferson County between December 2, 1950 and April 2, 2008. A summary table of events related to each hazard type is included in the hazard profile sections that follow. A list of the events, including additional sources that identify specific occurrences, are included as Appendix D. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail were plotted using SPC recorded latitude and longitude. These events are plotted and included as Appendix E. The list of NCDC hazards is included in Table 4-1.

Table 4-1: Climatic Data Center Historical Hazards

Hazard
Tornadoes
Severe Thunderstorms
Drought/Extreme Heat
Winter Storms
Flood/Flash flood

4.1.4 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-2 lists the hazards Jefferson County will address in this multi-hazard mitigation plan. In addition, these hazards ranked the highest based on the Risk Priority Index discussed in section 4.1.5.

Table 4-2: Planning Team Hazard List

Hazard
Tornado
Thunderstorms/ High Winds/Hail/ Lightning
Transportation of Hazardous Material Release
Earthquake
Winter Storms
Flooding

4.1.5 Calculating the Risk Priority Index

The first step in determining the Risk Priority Index (RPI) was to have the planning team members generate a list of hazards which have befallen or could potentially befall their community. Next, the planning team members were asked to assign a likelihood rating based on the criteria and methods described in the following table. Table 4-3 displays the probability of the future occurrence ranking. This ranking was based upon previous history and the definition of hazard. Using the definitions given, the likelihood of future events is "Quantified" which results in the classification within one of the four "Ranges" of likelihood.

Table 4-3: Future Occurrence Ranking

Probability	Characteristics
4 - *Highly Likely*	Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.
3 - *Likely*	Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year.
2 - *Possible*	Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.
1 - *Unlikely*	Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.

Next, planning team members were asked to consider the potential magnitude/severity of the hazard according to the severity associated with past events of the hazard. Table 4-4 gives four classifications of magnitude/severity.

Table 4-4: Hazard Magnitude

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.

Finally, the RPI was calculated by multiplying the probability by the magnitude/severity of the hazard. Using these values, the planning team member where then asked to rank the hazards. Table 4-5 identifies the RPI and ranking for each hazard facing Jefferson County.

Table 4-5: Jefferson County Hazards (RPI)

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Tornado	4+ - Highly Likely	8 - Catastrophic	32	1
Thunderstorms/ High Winds/Hail/ Lightning	4+ - Highly Likely	4 - Critical	16	2
Transportation of Hazardous Material Release	4+ - Highly Likely	4 - Critical	16	3
Earthquake	2 - Possible	8 - Catastrophic	16	4
Winter Storms	3 - Likely	2 - Limited	6	5
Flooding	3 - Likely	2 - Limited	6	6

4.1.6 Jurisdictional Hazard Ranking

Because the jurisdictions in Jefferson County differ in their susceptibilities to certain hazards—for example, portions of Mount Vernon are located within the floodplains of the Big Muddy River and two of it tributaries, is more likely to experience significant flooding than Woodlawn which is located a substantial distance away from any large stream or river which could potentially cause significant flooding—the hazards identified by the planning team were ranked by SIUC for each individual jurisdiction using the methodology outlined in Section 4.1.5. The SIUC rankings were based on input from the planning team members, available historical data, and the hazard modeling results described within this hazard mitigation plan. During the five-year review of the plan this table will be updated by the planning team 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).

Table 4-6: Hazard Rankings by Jurisdiction

Jurisdiction	Hazard					
	Tornado	HAZMAT	Earthquake	Thunder-storms	Flooding	Winter Storms
Belle Rive	1	3	3	2	6	5
Bluford	1	3	4	2	6	5
Bonnie	1	3	4	2	6	5
Dix	1	3	4	2	6	5
Ina	1	2	4	3	5	6
Mount Vernon	1	2	5	4	3	6
Nason	1	3	4	2	6	5
Waltonville	1	3	4	2	6	5
Woodlawn	1	2	4	3	5	6

Rankings: 1 being the highest concern to higher number which is a lesser concern.
NA = Not applicable

4.1.7 GIS and HAZUS-MH

The third step in this assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. Where possible, the hazards were quantified using GIS analyses and HAZUS-MH. This process reflects a level two approach to analyzing hazards as defined for HAZUS-MH. The approach includes substitution of selected default data with local data. Level two analysis significantly improves the accuracy of the model predictions.

HAZUS-MH generates a combination of site-specific and aggregated loss estimates depending upon the analysis options that are selected and upon the input that is provided by the user. Aggregate inventory loss estimates, which include building stock analysis, are based upon the assumption that building stock is evenly distributed across census blocks/tracts. Therefore, it is possible that overestimates of damage will occur in some areas while underestimates will occur in other areas. With this in mind, total losses tend to be more reliable over larger geographic areas than for individual census blocks/tracts. It is important to note that HAZUS-MH is not intended to be a substitute for detailed engineering studies. Rather, it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This documentation does not provide full details on the processes and procedures completed in the development of this project. It is only intended to highlight the major steps that were followed during the project.

Site-specific analysis is based upon loss estimations for individual structures. For flooding, analysis of site-specific structures takes into account the depth of water in relation to the structure. HAZUS-MH also takes into account the actual dollar exposure to the structure for the costs of building reconstruction, content, and inventory. However, damages are based upon the assumption that each structure falls into a structural class, and that structures in each class will respond in similar fashion to a specific depth of flooding. Site-specific analysis is also based upon a point location rather than a polygon; therefore the model does not account for the percentage of a building that is inundated. These assumptions suggest that the loss estimates for site-specific structures as well as for aggregate structural losses need to be viewed as

approximations of losses that are subject to considerable variability rather than as exact engineering estimates of losses to individual structures.

The following events were analyzed. The parameters for these scenarios were created using GIS, HAZUS-MH, and historical information to predict which communities would be at risk.

Using HAZUS-MH

1. 100-year overbank flooding
2. Earthquake

Using GIS

1. Tornado
2. Hazardous Material Release

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

4.2.1.1 Processes and Sources for Identifying Assets

The HAZUS-MH data is based on best available national data sources. The initial step involved updating the default HAZUS-MH data using State of Illinois data sources. At Meeting #1, the planning team members were provided with a plot and report of all HAZUS-MH critical facilities. The planning team took GIS data provided by SIU-Polis, verified the datasets using local knowledge, and allowed SIU-Polis to use their local GIS data for additional verification. SIU-Polis GIS analysts made these updates and corrections to the HAZUS-MH data tables prior to performing the risk assessment. These changes to the HAZUS-MH inventory allow a level two analysis. This update process improved the accuracy of the model predictions.

The default HAZUS-MH data has been updated as follows:

- The HAZUS-MH defaults, critical facilities, and essential facilities have been updated based on most recent available data sources. Critical and essential point facilities have been reviewed, revised, and approved by local subject matter experts at each county.
- The essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) have been applied to the HAZUS-MH model data. HAZUS-MH reports of essential facility losses reflect updated data.
- Parcels with assessment improvements (buildings) values were used to estimate the number of buildings in the flood-prone areas.
- The analysis is restricted to the county boundaries. Events that occur near the county boundary do not contain damage assessments from the adjacent county.

4.2.1.2 Essential Facilities List

Table 4-7 identifies the essential facilities that were added or updated for the analysis. A complete list of the critical facilities is included as Appendix F. A map of all the critical facilities is included as Appendix G.

Table 4-7: Essential Facilities List

Facility	Number of Facilities
Care Facilities	14
Emergency Centers	2
Fire Stations	12
Police Stations	5
Schools	33

4.2.1.3 Facility Replacement Costs

Default HAZUS-MH default building stock data were used for the HAZUS-MH analyses. Facility replacement costs and total building exposure are identified in Table 4-8. Table 4-8 also includes the estimated numbers of buildings within each occupancy class.

Table 4-8: Building Exposure (default HAZUS-MH) for Jefferson County

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Agricultural	139	$19,911
Commercial	837	$471,211
Education	34	$65,970
Government	33	$12,659
Industrial	191	$84,393
Religious/Non-Profit	98	$68,979
Residential	18,401	$1,899,983
Total	**19,733**	**$2,623,106**

Jefferson County provided parcel boundaries with assessed values. The Assessors data did not contain building replacement cost information and other building characteristics, and thus could not be used for the census block aggregated HAZUS-MH analysis. The parcel data was used to estimate the actual number of buildings within the flood-prone areas. The parcel data identified parcels with building improvements, which were then converted into centroid point locations. The parcels with improvements are summarized by occupancy class in Table 4-9.

Table 4-9: Parcels with Improvements by Occupancy Class for Jefferson County

Occupancy Class	Count
Residential	11,488
Commercial	1,310
Industrial	77
Agriculture	4,367
Exempt	1,364
Total	**18,606**

4.3 Future Development

Jefferson County is subject to a variety of natural disasters. County government, in partnership with State government, must make a commitment to prepare for those types of disasters. Likewise, the Jefferson County manufacturing base leaves the county vulnerable to major hazardous materials events and other technological threats. However, as the county-elected and appointed officials become better informed on the subject of community hazards, they will be better able to set and direct policies that will enable emergency management and county response agencies to effectively plan, train, and exercise. The end result will be a stronger community and a better place in which to work, live, and grow.

4.4 Hazard Profiles

4.4.1 Tornado Hazard

Hazard Definition for Tornado Hazard

Tornadoes pose a great risk to the State of Illinois and its citizens. Tornadoes historically have occurred during any month of the year. The unpredictability of tornadoes makes them one of Illinois' most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 mph, but higher and lower values can occur. A wind velocity of 200 mph will result in a wind pressure of 102.4 pounds per square foot of surface area, a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as 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 very quickly and become a tornado. If the funnel cloud picks up and blows around debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. The tornado scale ranges from low intensity F0, with effective wind speeds of 40 to 70 mph, to F5 tornadoes with effective wind speeds of over 260 mph. The Fujita intensity scale is included in Table 4-10.

Table 4-10: Fujita Tornado Rating

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, sign boards 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.
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 for Tornado Hazard

There have been several occurrences of tornadoes within Jefferson County during recent decades. The NCDC database reported 17 tornadoes/funnel clouds in Jefferson County since 1957. These tornados have been attributed with 2 deaths, 55 injuries and nearly $3.6 million dollars in property damage in Jefferson and adjacent counties.

The last recorded tornado occurred on April 12, 2005. This tornado, which was videotaped and well-photographed, was over Rend Lake during most of its existence. Tree limbs were blown down south of Nason, as well as near Ina. Peak winds were estimated near 65 MPH. A supercell thunderstorm developed along the western Franklin/Jefferson County line, then moved east along the county line. The storm produced copious amounts of large hail, up to the size of nickels, along with a weak tornado that lasted approximately eight minutes.

Jefferson County tornadoes recorded in the NCDC database are identified in Table 4-11. Additional details for NCDC events are included in Appendix D.

Table 4-11: Jefferson County Tornadoes*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	12/18/1957	Tornado	F2	0	2	25K	0
Jefferson	12/18/1957	Tornado	F4	1	45	2.5M	0
Jefferson	12/18/1957	Tornado	F2	0	0	25K	0
Jefferson	12/19/1957	Tornado	F2	0	0	25K	0
Jefferson	5/9/1959	Tornado	F1	0	0	25K	0
Jefferson	2/9/1960	Tornado	F2	0	1	250K	0
Jefferson	4/20/1966	Tornado	F0	0	0	25K	0
Jefferson	5/7/1973	Tornado	F1	0	3	0K	0
Jefferson	3/30/1982	Tornado	F2	1	3	2.5M	0
Jefferson	5/1/1983	Tornado	F1	0	0	2.5M	0
Waltonville	5/18/1995	Tornado	F0	0	0	0	0
Ina	4/19/1996	Tornado	F3	0	0	200K	0
Cravat	4/15/1998	Tornado	F2	0	1	400K	0
Waltonville	8/18/2001	Tornado	F0	0	0	0	0
Bluford	4/21/2002	Tornado	F1	0	0	2K	0
Woodlawn	5/30/2004	Tornado	F1	0	0	100K	0
Nason	4/12/2005	Tornado	F0	0	0	0	0

Source: NCDC

* 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 for occurrence of tornadoes. They can occur at any location within the county.

Hazard Extent for Tornado Hazard

The historical tornadoes listed previously generally move from west to east across the county—although many other tracks are possible—from more southerly to northerly. The extent of the hazard varies both in terms of the extent of the path and the wind speed.

Calculated Risk Priority Index for Tornado Hazard

Based on historical information, the probability of future tornadoes in Jefferson County is highly likely. Tornadoes with varying magnitudes are expected to happen. According to the RPI, tornadoes ranked as the number one hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	8	=	32

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area of the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Jefferson County are discussed in types and numbers in Table 4-8.

Critical Facilities

All critical facilities are vulnerable to tornadoes. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts will vary based on the magnitude of the tornado, but can include structural failure, debris (trees or limbs) causing damage, 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 numbers of all of the essential facilities in the area. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Building Inventory

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

Infrastructure

During a tornado the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a tornado. 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 fail or become impassable causing risk to traffic.

An example scenario is described as follows to illustrate the anticipated impacts of tornadoes in the county in terms of numbers and types of buildings and infrastructure.

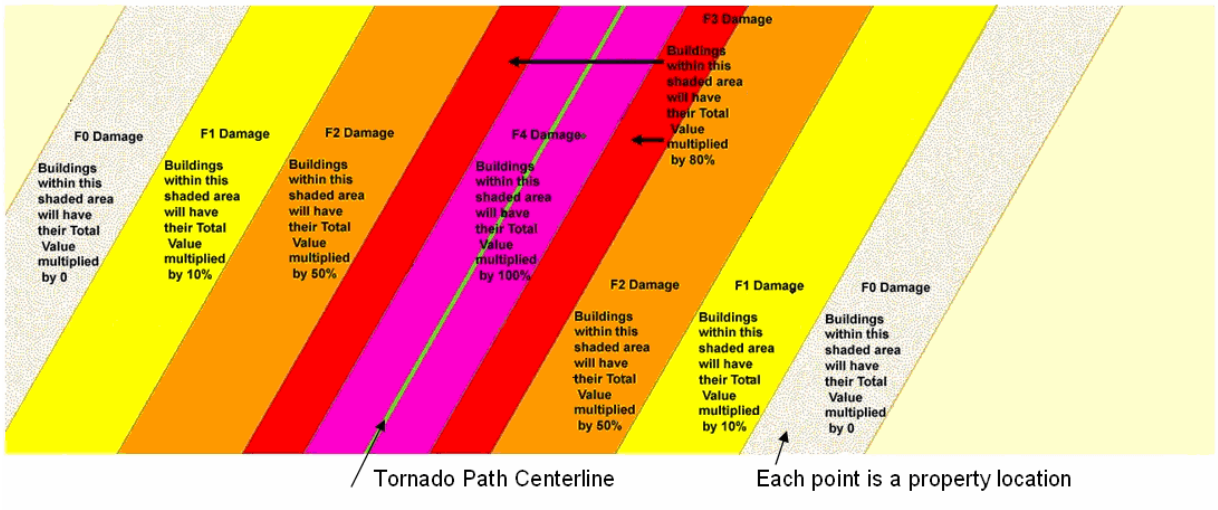
GIS overlay modeling was used to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon an F4 tornado event that would run for 24 miles through the towns of Mount Vernon and Bluford. The selected widths were modeled after a recreation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these six categories. Table 4-12 depicts tornado damage curves as well as path widths.

Table 4-12: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
F-5	3000	100%
F-4	2400	100%
F-3	1800	80%
F-2	1200	50%
F-1	600	10%
F-0	300	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path with a decreasing amount of damage away from the center of the path. This natural process was modeled in GIS by adding damage zones around the tornado path. Figure 4-1 and Table 4-13 describe the zone analysis.

Figure 4-1: GIS Analysis Using Tornado Buffers



Once the hypothetical route is digitized on the map, several buffers are created to model the damage functions within each zone.

An F4 tornado has four damage zones. Total devastation is estimated within 150 feet of the tornado path (the darker-colored Zone 1). The outer buffer is 900 feet from the tornado path (the lightest colored Zone 4), within which 10% of the buildings will be damaged.

Table 4-13: Tornado Zones and Damage Curves

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

The selected hypothetical tornado path is depicted in Figure 4-2, and the damage curve buffers with damaged buildings are shown in Figures 4-3 and 4-4.

Figure 4-2: Hypothetical F4 Tornado Path in Jefferson County

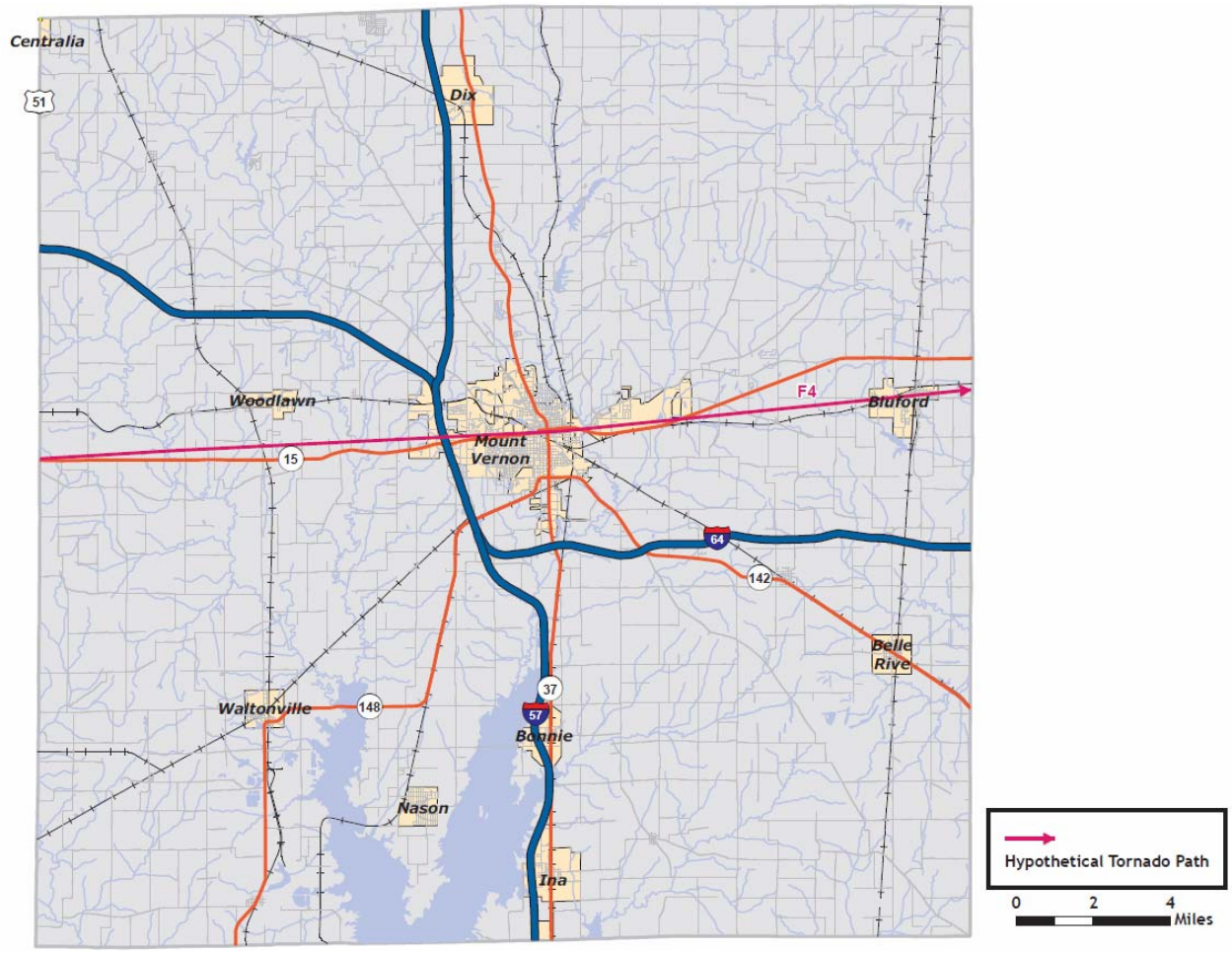


Figure 4-3: Modeled F4 Tornado Damage Buffers in Mount Vernon

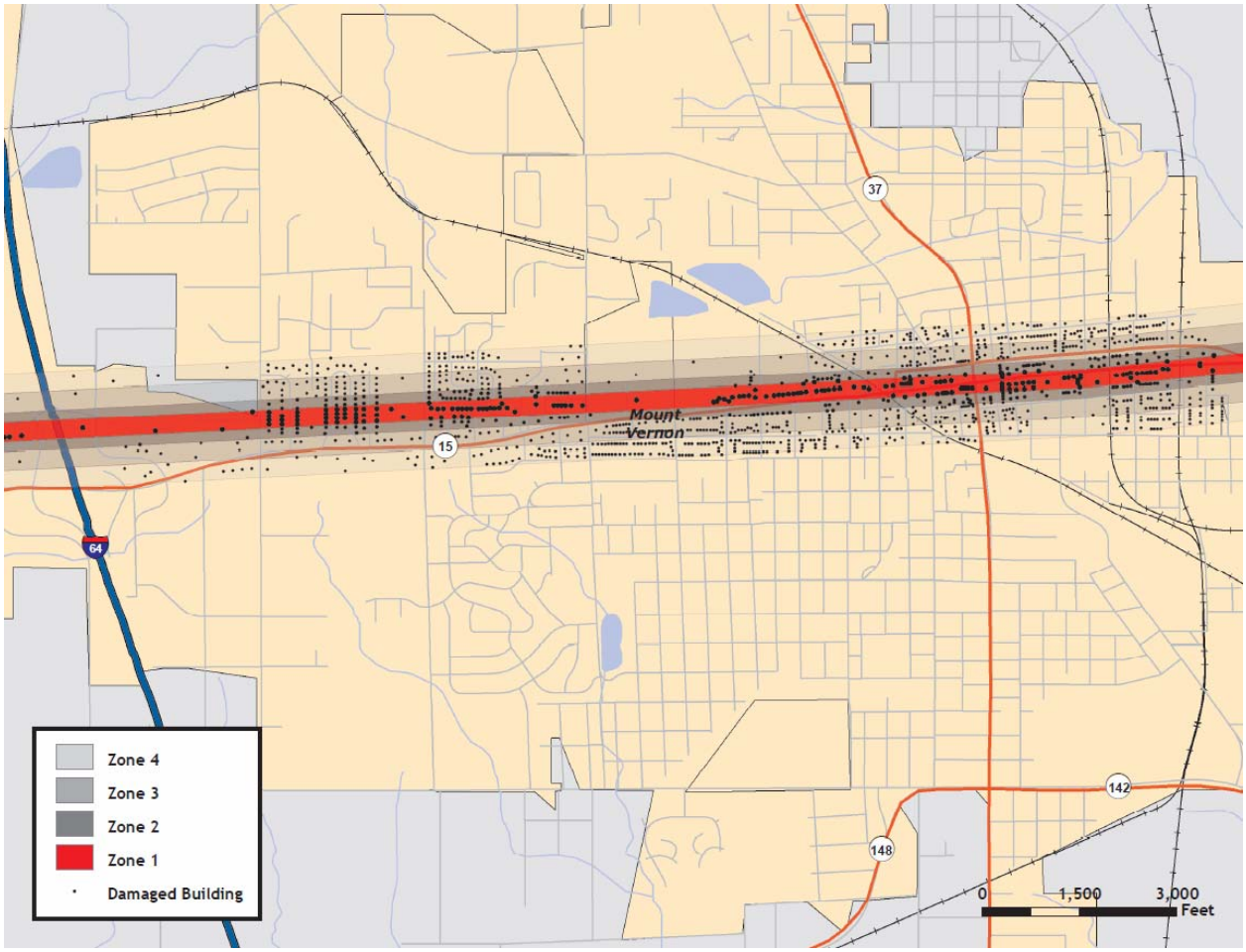
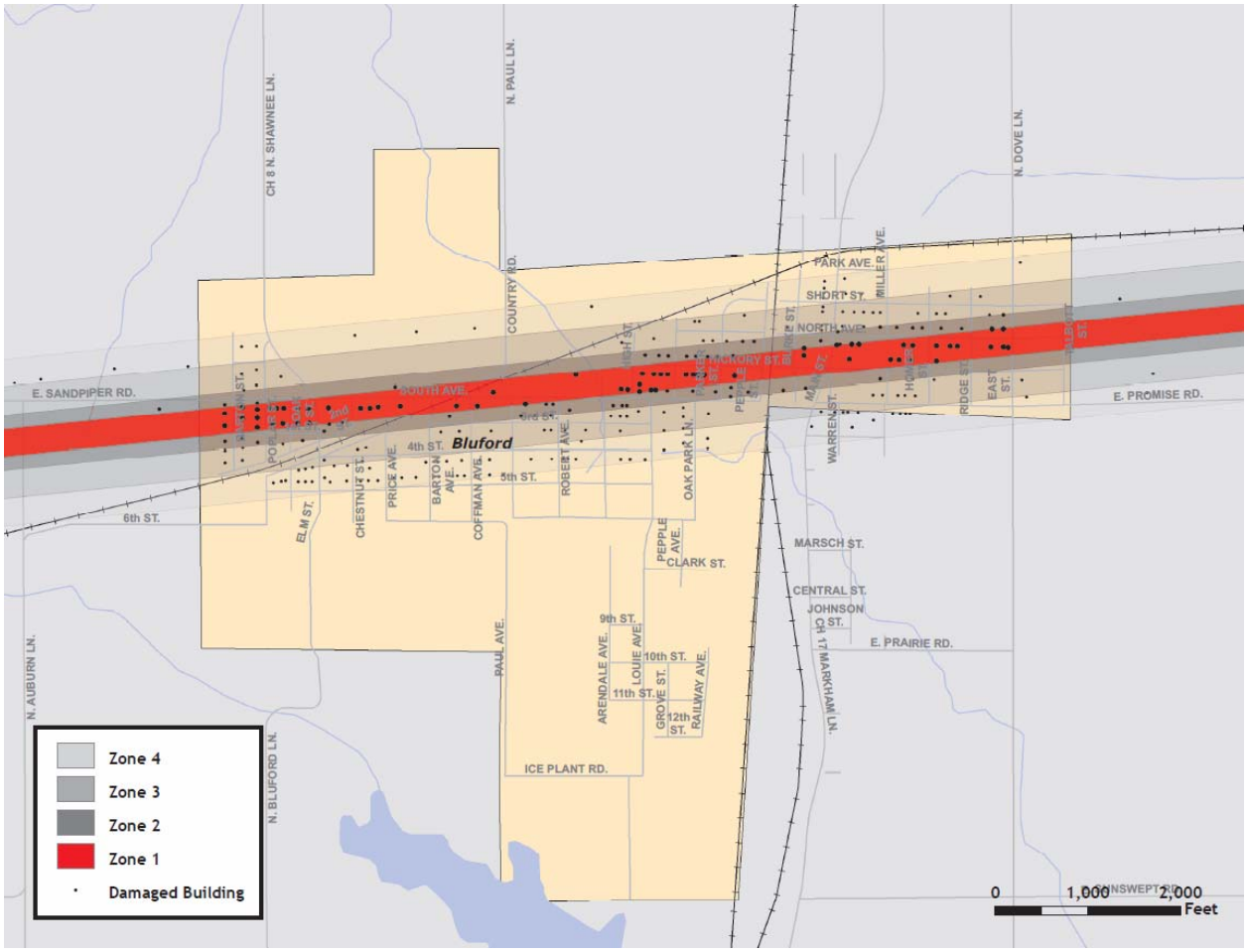


Figure 4-4: Modeled F4 Tornado Damage Buffers in Bluford



The results of the analysis are depicted in Tables 4-14 and 4-15. The GIS analysis estimates that 1,741 buildings will be damaged. The estimated building losses were $101.7 million. The building losses are an estimate of assessed values multiplied by the percentages of damage. The overlay was performed against parcels provided by Jefferson County that were joined with Assessor records showing property improvement.

The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable. For the purposes of this analysis, the total number of buildings for government, religious/non-profit, and education should be lumped together as “Exempt.”

Table 4-14: Estimated Numbers of Buildings Damaged by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	157	168	293	396
Commercial	97	94	194	110
Industrial	0	1	0	1
Agriculture	10	10	27	15
Exempt	27	35	53	53
Total	**291**	**308**	**567**	**575**

Table 4-15: Estimated Building Losses by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$8,056,029	$6,240,480	$7,092,560	$1,680,638
Commercial	$28,468,308	$13,621,416	$31,775,276	$2,672,978
Industrial	$0	$111,718	$0	$25,313
Agriculture	$628,536	$355,872	$814,344	$185,353
Religious	$0	$0	$0	$0
Total	**$37,152,873**	**$20,329,486**	**$39,682,179**	**$4,564,282**

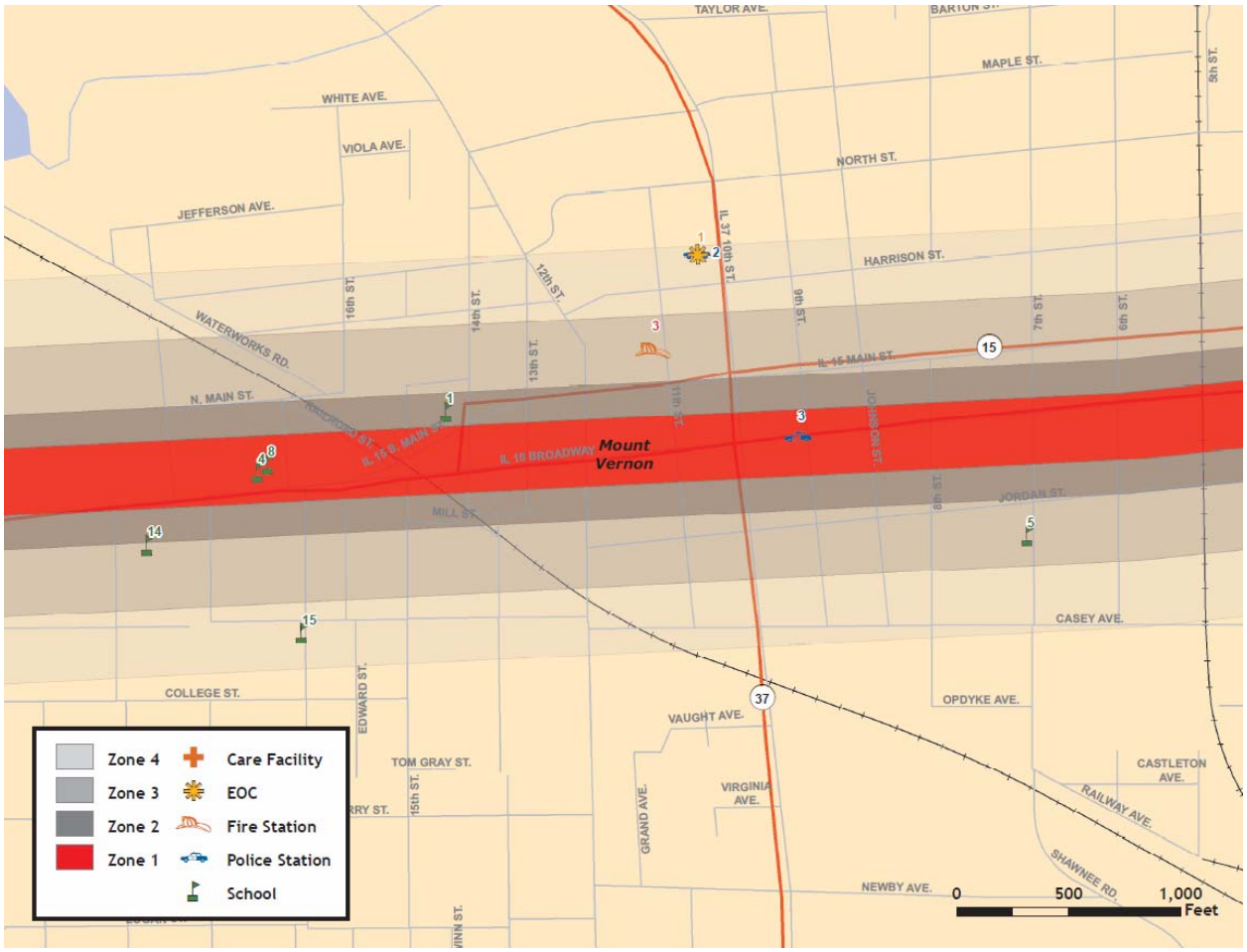
Essential Facilities Damage

There are 13 essential facilities located within 900 feet of the hypothetical tornado path. The model predicts that one medical care facility, one emergency operations center, three fire stations, two police stations, and six schools would experience damage. The affected facilities are identified in Table 4-16, and their geographic locations are shown in Figure 4-5.

Table 4-16: Estimated Essential Facilities Affected

Name
Countryside Manor
Mt. Vernon Civil Emergency Service
Mt. Vernon City Fire Department (Main Street)
Webber Township Fire Protection
Mt. Vernon City Fire Department (Airport Road)
Mt. Vernon Police Department
Jefferson County Emergency Telephone
St. Mary Elementary School
Victory Christian Academy
Mt. Vernon High School
Mt. Vernon Alternative School
Zadock Casey Middle School
Dr. Andy Hall Elementary School

Figure 4-5: Essential Facilities within Tornado Path



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and buildings have been identified as at risk because tornadoes can occur anywhere within the State of Illinois, at any time of the day, and during any month of the year. Furthermore, any future development in terms of new construction within the county will be at risk. The building exposure for Jefferson County is included in Table 4-8.

All critical facilities in the county and its communities are at risk. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures should be built with sturdier construction, and existing structures should be hardened to lessen the potential impacts of severe weather. Community sirens to warn of approaching storms are also vital to ensuring the safety of Jefferson County residents.

4.4.2 Flood 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 amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates into the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of two types: 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 eighteen inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas where they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at anytime 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.

Hazard Definition for Dam and Levee Failure

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities land-ward of the levee. Dams and levees can fail due to either: 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it can not hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added

infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, then the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee-failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.

Previous Occurrences for Riverine and Flash Flooding

The NCDC database reported 21 flood events in Jefferson County since 1993. These flood events haven been attributed with $80,000 in property damage in Jefferson and adjacent counties. One example of a flooding event in Jefferson County was March 12, 2006, when widespread flash flooding inundated thousands of acres of low-lying areas. Many roads were underwater. Rayse Creek and smaller creeks in its vicinity overflowed into woods and fields.

In Mount Vernon, the public works director described the flooding as the worst in 31 years. Some streets in Mount Vernon were impassable for several blocks due to major flooding. Several vehicles stalled in the deep water, and several homes were flooded in the city. Outside the city in other parts of the county, one house was inaccessible by vehicle due to floodwater estimated to be four feet deep.

Significant Jefferson County floods recorded by the NCDC are shown in Table 4-17. A complete list of flood events and additional information about the significant flood events are included in Appendix D. Historical flood crests and discharges at hydrologic monitoring stations are summarized in Appendix H.

Table 4-17: Jefferson County Previous Occurrences of Flooding*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	11/14/1993	Flash Flood	N/A	0	0	5K	0
Salem	8/9/1995	Flash Flood	N/A	0	0	0K	0
Mt Vernon	4/28/1996	Flash Flood	N/A	0	0	20K	0
Jefferson	3/1/1997	Flood	N/A	0	0	20K	0
Mt Vernon	7/14/1997	Urban/sml Stream Fld	N/A	0	0	5K	0
Jefferson	1/21/1999	Flash Flood	N/A	0	0	0	0
Jefferson	1/21/1999	Flood	N/A	0	0	0	0
Jefferson	1/31/1999	Flash Flood	N/A	0	0	0	0
Jefferson	4/4/1999	Flood	N/A	0	0	0	0
Mt Vernon	6/17/2000	Flash Flood	N/A	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Mt Vernon	6/5/2001	Flash Flood	N/A	0	0	0	0
Mt Vernon	5/12/2002	Flash Flood	N/A	0	0	0	0
Waltonville	6/27/2002	Flash Flood	N/A	0	0	0	0
Jefferson	5/6/2003	Flash Flood	N/A	0	0	0	0
Mt Vernon	5/25/2004	Flash Flood	N/A	0	0	0	0
Mt Vernon	5/26/2004	Flash Flood	N/A	0	0	0	0
Jefferson	8/26/2004	Flash Flood	N/A	0	0	0	0
Mt Vernon	8/28/2004	Flash Flood	N/A	0	0	0	0
Jefferson	3/12/2006	Flash Flood	N/A	0	0	30K	0
Jefferson	6/1/2006	Flash Flood	N/A	0	0	0	0
Mt Vernon	7/21/2006	Flash Flood	N/A	0	0	0	0

Source: NCDC

* 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.

Previous Occurrences for Dam and Levee Dam Failure

According to the Jefferson County planning team, there are no records or local knowledge of any dam or certified levee failure in the county.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the National Flood Insurance Program (NFIP), which 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.

Illinois Emergency Management was contacted to determine the location of repetitive loss structures. Jefferson County has no repetitive loss structures within the county.

Geographic Location for Flooding

Most riverine floods in Illinois occur during either the spring or summer and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Flash flooding in Illinois can occur during anytime 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 State of Illinois has recently completed the modernization of the Flood Insurance Rate Maps (FIRMs) for Jefferson County. However, at the time of preparation of this plan the digital FIRM was still preliminary in status and may vary from the final official FEMA DFRIM for Jefferson County. A digital file of the FIRM maps was used to identify specific stream reaches for analysis. The areas of riverine flooding are depicted on the map in Appendix E.

In Meeting #4, held on January 23, 2009, the planning team members listed a voluntary buyout option as a mitigation strategy to alleviate damage to structures within the county's flood plain. They identified potential hazard areas in which this program may prove valuable. The results are listed in Table 4-18.

Table 4-18: Potential Voluntary Buyout Properties

Jurisdiction	Number of Structures	Road	Stream/River Floodplain
Jefferson County	3	State Route 15	Big Muddy River
Jefferson County	2	N. Black Hawk LN	Tributary Big Muddy River
Jefferson County	1	N. Cartel LN	Big Muddy River
Jefferson County	3	Radom RD	Tributary to Novak Creek
Mt. Vernon	2	5th Street	Casey Fork
Mt. Vernon	3	6th Street	Casey Fork
Mt. Vernon	10	7th Street	Tributary to Casey Fork
Mt. Vernon	2	11th Street	Tributary to Casey Fork
Mt. Vernon	4	Meadow Brook RD	Casey Fork
Mt. Vernon	4	Cooper ST	Casey Fork
Mt. Vernon	2	Fairfield RD	Casey Fork
Mt. Vernon	5	Pace Ave	Tributary to Casey Fork
Mt. Vernon	9	Bishop CT	Tributary to Casey Fork
Mt. Vernon	5	Williams Ave	Tributary to Casey Fork

Geographic Location for Dam and Levee Failure

The National Inventory of Dams identified 32 dams in Jefferson County. The map in Appendix E illustrates the location of Jefferson County dams. Table 4-19 summarizes the National Inventory of Dams information.

Table 4-19: National Inventory of Dams

Name	River	Hazard	EAP
MILLER LAKE DAM	TRIB CASEY FORK	H	Y
FREEMAN/ /EAST LAKE DAM	TRIB BUCK CREEK	S	N
LAKE JAYCEE DAM	TRIB CASEY FORK	S	Y
SUPERIOR LAKE DAM	TRIBBIG MUDDY RIVER	L	N
L & N RESERVOIR	TRIB CASEY FORK	H	Y
HAWTHORNE HILLS LAKE DAM	TRIB CASEY FORK	S	N
RAW WATER RESERVOIR DAM	WARD BRANCH	S	N
ILLINOIS CENTRAL RESERVOIR DAM	FOURMILE CREEK	S	N
WALTONVILLE LAKE DAM	TRIB BUCK CREEK	S	N
FREEMAN UNITED/ORIENT 3/FINE REFUSE DAM	TRIB BIG MUDDY RIVER	L	N
FREEMAN UNITED/ORIENT 6 /SOUTH SLURRY CE	TRIB EAST HURRICANE CREEK	S	Y
LAGG LAKE 1 DAM	TRIB CASEY CREEK	L	N
LAKE NORMANDY DAM	TRIB LIMESTONE CREEK	L	N
LAGG LAKE 2	TRIB CASEY FORK	L	N
O'DANIEL LODGE LAKE DAM	TRIB HORSE CREEK	L	N
WALTONVILLE MANUFACTURING LAKE DAM	TRIB BUCK CREEK	L	N
FREEMAN UNITED/ /2 PORTAL LAKE	TRIB LITTLE MUDDY RIVER	L	N
O'DANIEL LODGE LAKE 2 DAM	TRIB HORSE CREEK	L	N
CONSOL/REND LAKE/SED POND 008 DAM	TRIB MOREDOCK LAKE	L	N
CONSOL/REND LAKE MINE/SLURRY CELL 2 DAM	TRIB REND LAKE	H	Y
TEDRICK LAKE DAM	TRIB DODDS CREEK	L	N
LEWIS INDUSTRIAL PARK DETENTION DAM	TRIB WEST DITCH	L	N
CONSOL/REND LAKE MINE/SLURRY POND DAM	TRIB REND LAKE	H	Y
FREEMAN UNITED/ORIENT 3/CLAR POND SADDLE	TRIB BUCK CREEK	L	N
ORIENT NO.3		L	N
ORIENT NO.3		L	N
ORIENT NO.6		S	N
ORIENT NO.6		S	N
REND LAKE		S	N
REND LAKE		S	N
REND LAKE		L	N
ORIENT NO.6 MINE		S	N

A review of the Illinois Department of Natural Resource's (IDNR) files identified no state or federal levees within Jefferson County.

Hazard Extent for Flooding

The HAZUS-MH flood model is designed to use a flood depth grid and flood boundary polygon from the FIRM data. HAZUS-MH was used to model the Base Flood Elevation (BFE). The BFE is defined as the area that has a 1% chance of flooding in any given year. Planning team input and a review of historical information provided additional information on specific flood events.

Hazard Extent for Dam and Levee Failure

Dams assigned the low (L) hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property. Dams assigned the significant (S) hazard classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns. Dams classified as significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. Dams assigned the high (H) hazard potential classification are those dams where failure or mis-operation has the highest risk to cause loss of human life and significant damage to buildings and infrastructure.

According to the IDNR and the National Inventory of Dams, four dams are classified as a high hazard dams. Six dams have an Emergency Action Plan (EAP). An EAP is not required by the State of Illinois but is recommended by Illinois Department of Natural Resources.

Accurate mapping of the risks of flooding behind levees depends on knowing the condition and level of protection the levees actually provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps better reflect the flood protection capabilities of levees and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually states, communities, or private individuals or organizations such as local levee districts—are responsible for ensuring that the levees they own are maintained to their original design level and condition. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove that the levee meets design, operation, and maintenance standards for protection against the 1% annual probability (100-year) flood.

Calculated Risk Priority Index for Flooding

Based on historical information and the HAZUS-MH flooding analysis results, the probability of flooding in Jefferson County is likely. According to the Risk Priority Index (RPI), flooding ranked as the number six hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Flooding (HAZUS-MH Analysis Using 100-Year Flood Boundary and Default Building Inventory)

HAZUS-MH generated the flood depth grid for a 100-year return period and made calculations by clipping the USGS 30-m DEM to the flood boundary. Next, HAZUS-MH estimated the damages for Jefferson County by utilizing default aggregate building inventory census data.

Building Inventory

A table of the building replacement costs (types and numbers of buildings) for the facilities identified in the flood areas are listed in Table 4-20. These buildings can expect impacts similar to those discussed for the critical facilities. These include structural failure, extensive water damage to the facility, and loss of facility functionality (i.e. residential buildings may no longer be able to provide shelter to their inhabitants).

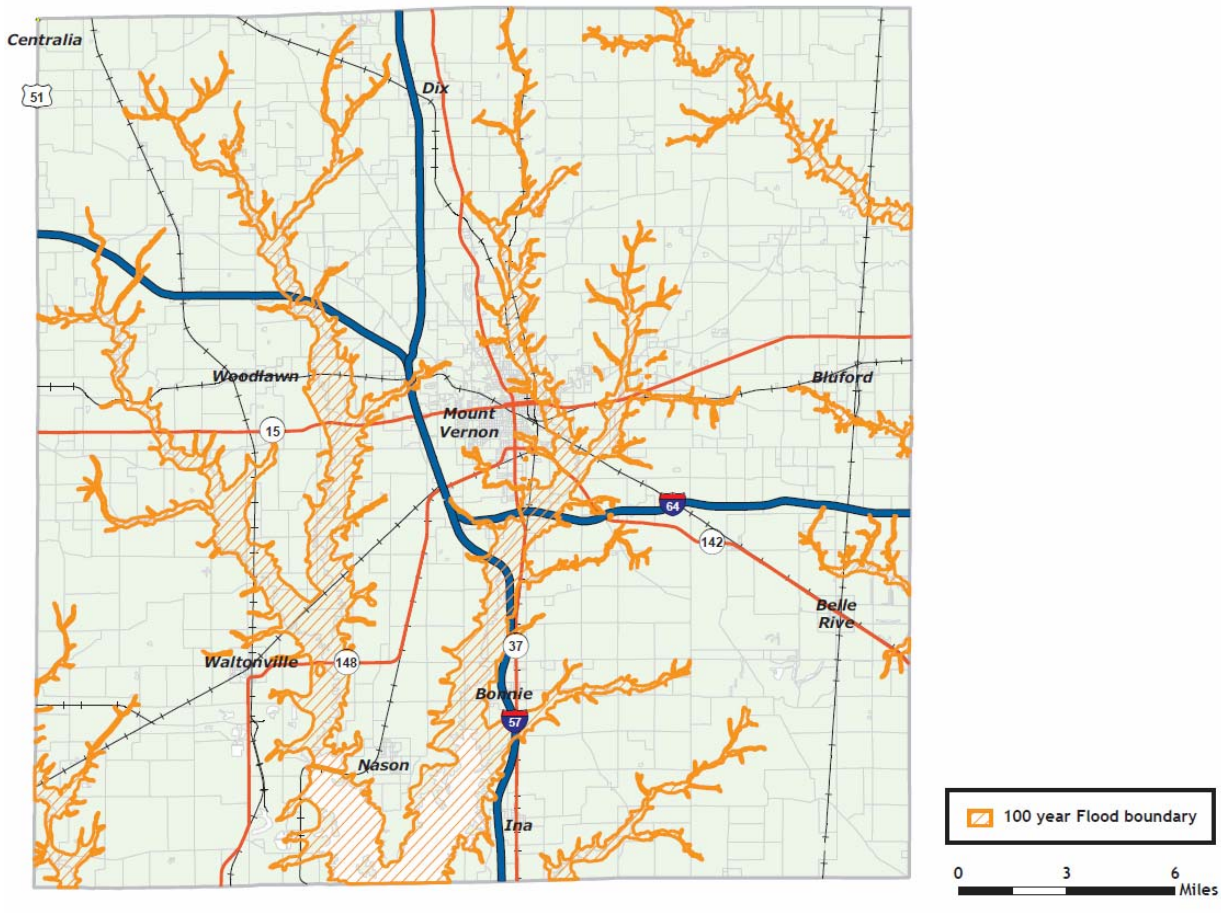
Table 4-20: Jefferson County HAZUS-MH Analysis Total Economic Loss (100-Year Flood)

General Occupancy	Total Damaged Buildings	Building Loss (X 1000)	Total Economic Loss (X 1000)
Agricultural	0	$290	$927
Commercial	0	$1,714	$6,508
Education	0	$47	$270
Government	0	$28	$333
Industrial	0	$980	$3,633
Religious/Non-Profit	0	$372	$1,669
Residential	39	$18,195	$27,573
Total	**39**	**$21,626**	**$40,913**

The reported building counts should be interpreted as degrees of loss rather than exact numbers of buildings exposed to flooding. These numbers were derived from aggregate building inventories, which were assumed to be dispersed evenly across census blocks. HAZUS-MH requires that a predetermined amount of square footage of a typical building sustains damage in order to produce a damaged building count. If only a minimal amount of building damage is predicted, it is possible to see no damaged building counts, even while seeing economic losses.

Figure 4-6 depicts the flood boundary from the HAZUS-MH analysis. HAZUS-MH estimates the 100-year flood would damage 39 buildings, totaling $21.6 million in building losses and $40.9 million in economic losses.

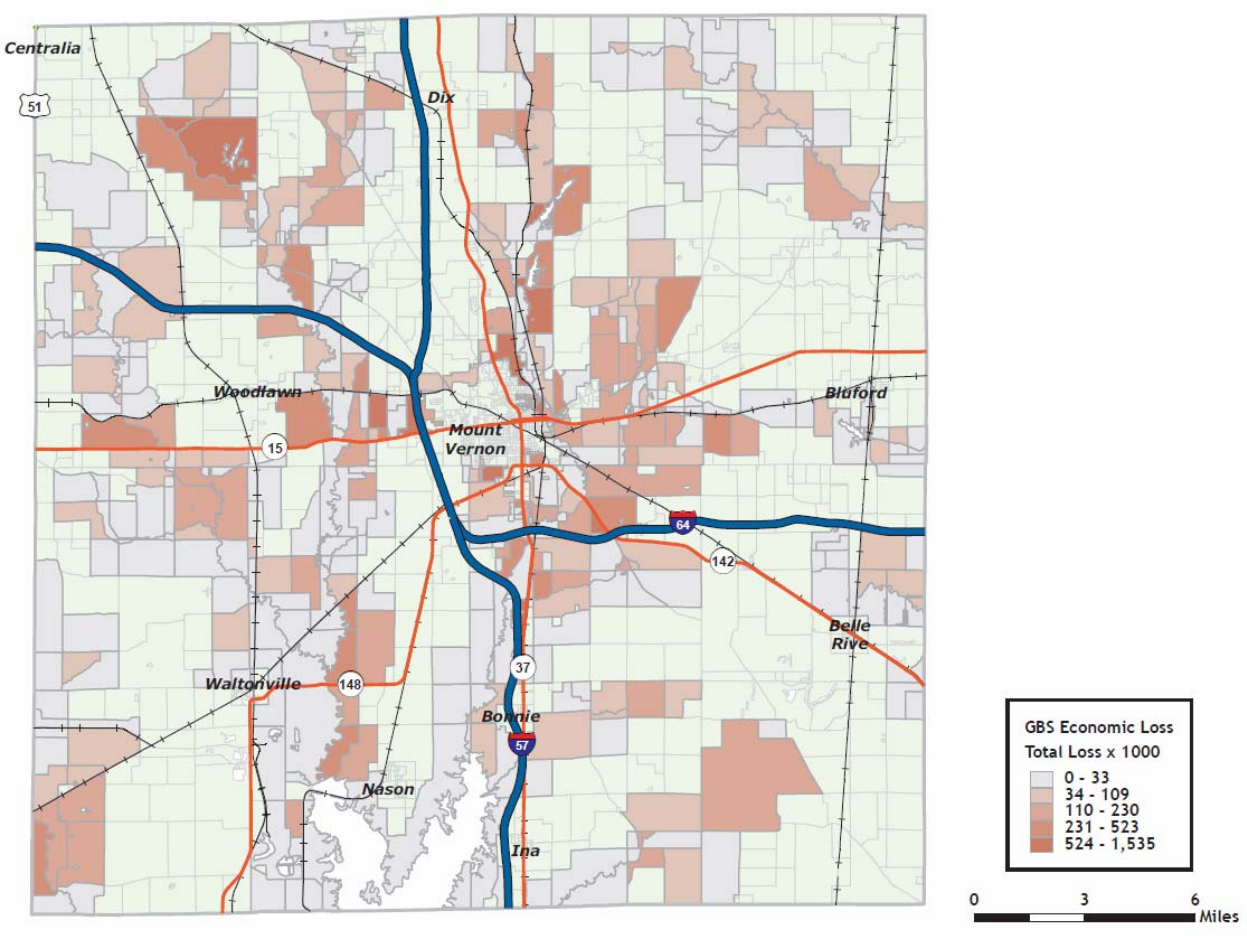
Figure 4-6: Jefferson County HAZUS-MH Analysis (100-Year Flood)



HAZUS-MH estimates four census blocks affected by the modeled flood event, with losses exceeding $1 million. The distribution of losses is shown in Figure 4-7.

HAZUS-MH aggregate loss analysis is evenly distributed across a census block. Census blocks of concern should be reviewed in more detail to determine the actual percentage of facilities that fall within the flood hazard areas. The aggregate losses reported in this study may be overstated.

Figure 4-7: Jefferson County Total Economic Loss (100-Year Flood)



Essential Facilities

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 will no longer be able to serve the community). A complete list of all the critical facilities, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

The HAZUS-MH analysis identified no facilities that may be subject to flooding.

GIS Analysis Using 100-Year Flood Boundary and County Parcels

HAZUS-MH generated the flood depth grid for a 100-year return period and made calculations by clipping the USGS 30-m DEM to the flood boundary. Next, HAZUS-MH utilized a user-defined analysis of Jefferson County with site-specific parcel data provided by the county.

HAZUS-MH estimates the 100-year flood would damage 509 buildings. The total estimated numbers of damaged buildings are given in Table 4-21. Figure 4-8 depicts the Jefferson County parcel points that fall within the 100-year floodplain. Figure 4-9 highlights damaged buildings within the floodplain areas in Mount Vernon.

Table 4-21: Jefferson County Potential Flood-Prone Buildings

General Occupancy	Total Damaged Buildings
Residential	170
Commercial	24
Industrial	3
Agricultural	178
Exempt	134
Total	**509**

Figure 4-8: Jefferson County Buildings in Floodplain (100-Year Flood)

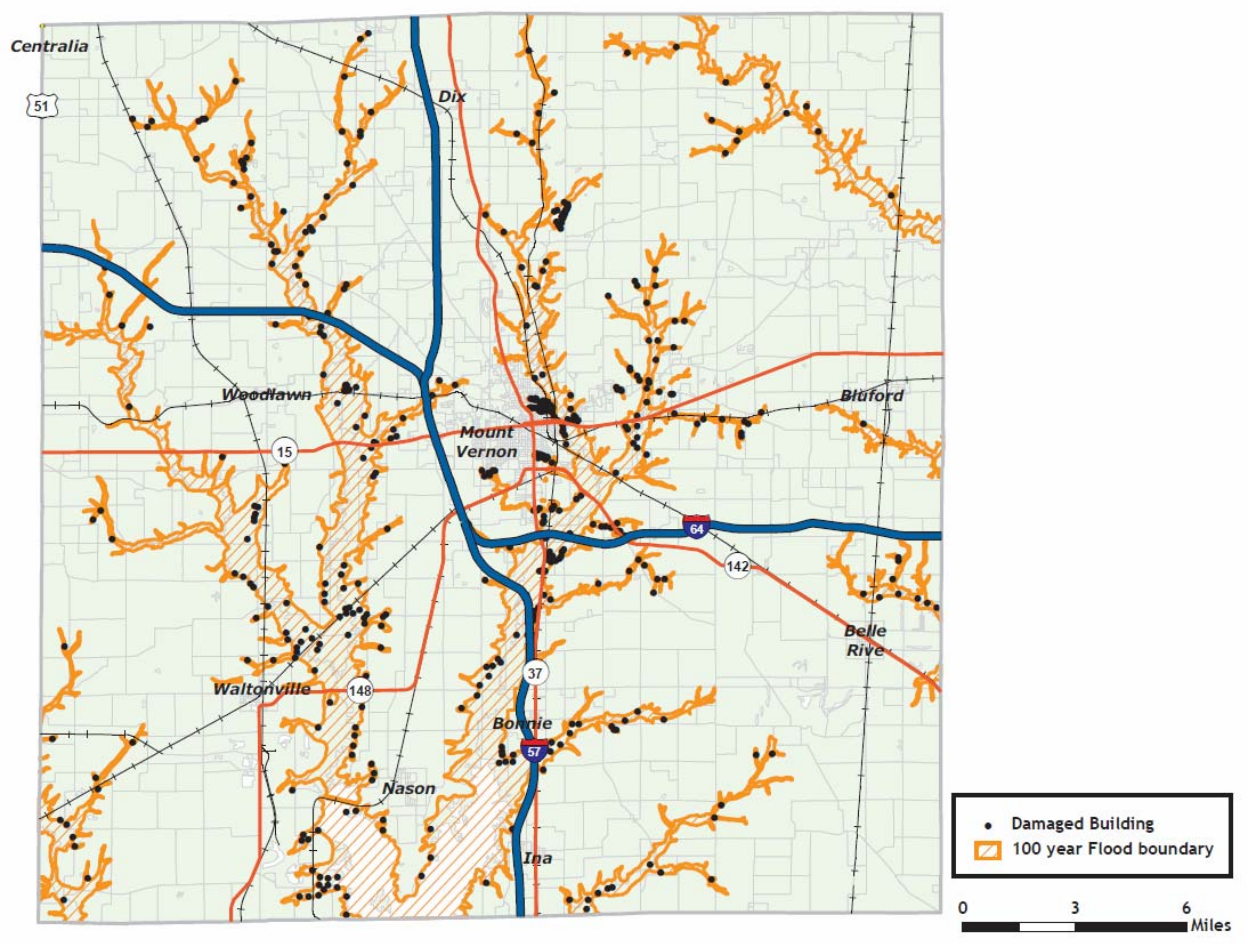
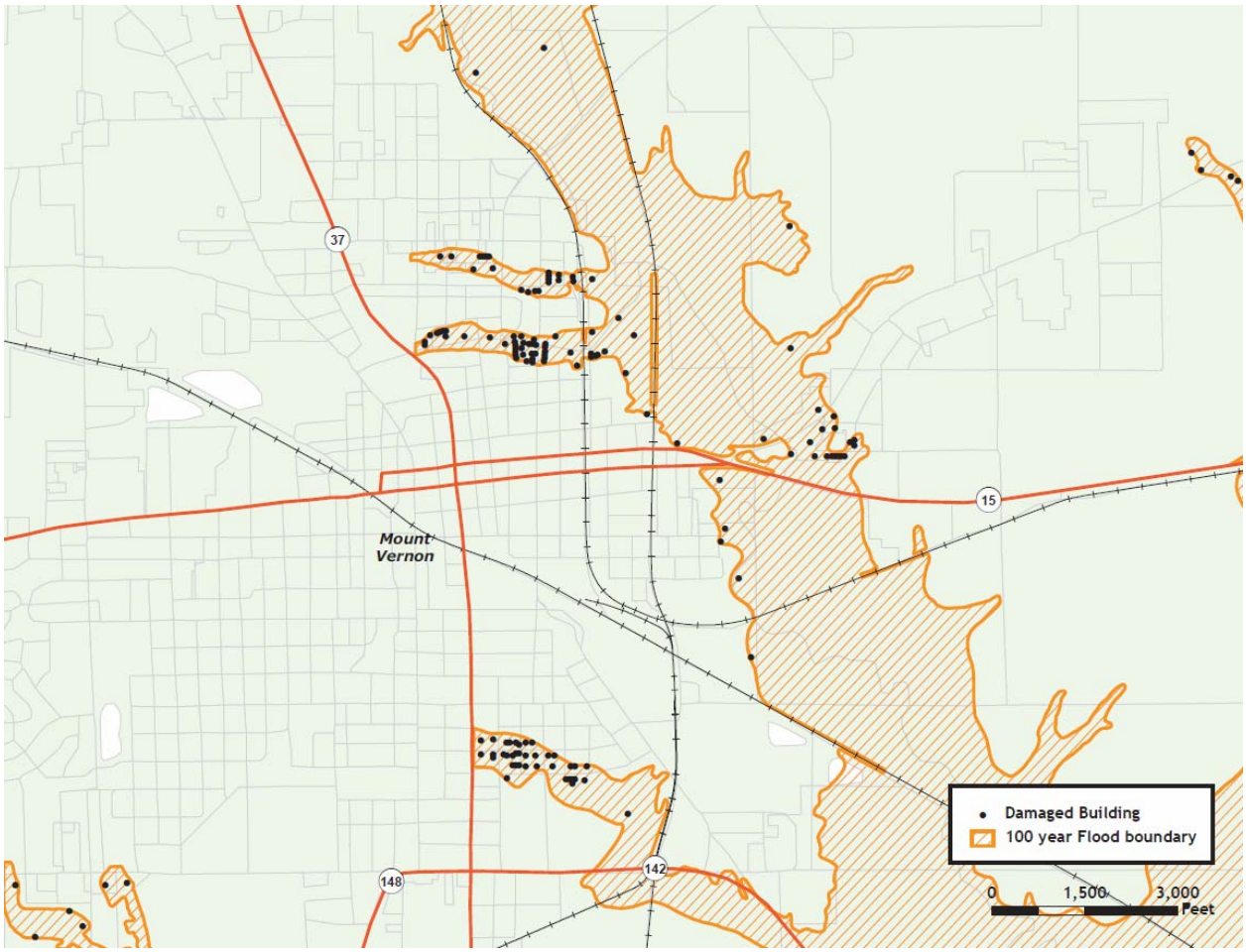


Figure 4-9: Jefferson County Urban Areas (Mount Vernon) Flood-Prone Areas (100-Year Flood)



Infrastructure

The types of infrastructure that could be 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 any number of these items could become damaged in the event of a flood. 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 fail or become impassable, causing a traffic risk.

Vulnerability Analysis for Flash Flooding

Flash flooding could affect any location within this jurisdiction; therefore, the entire county's population and buildings are vulnerable to a flash flood. These structures can expect the same impacts as discussed in a riverine flood.

Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Vulnerability Analysis for Dam and Levee Failure

An EAP is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation and maintenance standards for protection against the 1% annual probability flood.

Vulnerability to Future Assets/Infrastructure for Flooding

Flash flooding may affect low lying or poorly drained areas within the county; therefore many buildings and infrastructure are vulnerable to flash flooding. Currently, the municipality zoning boards review new development for compliance with local zoning ordinances. The Jefferson Supervisor of Assessments administers the floodplain for the county. At this time no construction is planned within the area of the 100-year floodplain. Therefore, there is no new construction, which will be vulnerable to a 100-year flood.

Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

Municipal Planning Commissions reviews new development for compliance with local zoning ordinances.

Analysis of Community Development Trends

Areas with recent development within the county may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible, which can cause the 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. Controlling floodplain development is the key to reducing flood-related damages.

4.4.3 Earthquake Hazard

Hazard Definition for Earthquake Hazard

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. For hundreds of millions of years, plate tectonics has shaped the Earth as the huge plates that form the Earth's surface move slowly over, under, and past each other. At their boundaries, the plates typically are locked together and unable to release the accumulating energy. When this energy grows strong enough, the plate boundary breaks free and causes the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern United States. The most seismically active area in the Midwest U.S. is the New Madrid Seismic Zone. Scientists have learned that the New Madrid fault system may not be the only fault system in the Central U.S. capable of producing damaging earthquakes. The Wabash Valley fault system in Illinois and Indiana manifests evidence of large earthquakes in its geologic history, and there may be other, as yet unidentified, faults that could produce strong earthquakes.

Ground shaking from strong earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated materials and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths, injuries, and extensive property damage. Magnitude measures the energy released at the source of the earthquake. Magnitude is determined from measurements on seismographs, and a single earthquake will have a single magnitude to quantify its strength. Earthquake intensity measures the strength of shaking produced by the earthquake at a certain location. Intensity is determined from effects on people, human structures, and the natural environment, and a single earthquake will have a wide range of intensity values at different locations around the epicenter. Table 4-22 is a description of earthquake intensity using an abbreviated Modified Mercalli Intensity scale, and Table 4-23 lists earthquake magnitudes and their corresponding intensities.

Source: http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

Table 4-22: 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 motor cars 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 motor cars 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, 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.

Table 4-23: Earthquake Magnitude vs. Modified Mercalli Intensity Scale

Earthquake Magnitude	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

Historical Earthquakes that have Affected Jefferson County

Numerous instrumentally measured earthquakes have occurred in Illinois. In the past few decades, with many precise seismographs positioned across Illinois, measured earthquakes have varied in magnitude from very low microseismic events of M=1-3 to larger events up to M=5.4. Microseismic events are usually only detectable by seismographs and rarely felt by anyone. The most recent earthquake in Illinois—as of the date of this report—occurred on June 1, 2008 at 8:56:12 local time about 35 km (25 miles) southeast of Olney, IL and measured 1.6 in magnitude.

The consensus of opinion among seismologists working in the Midwest is that a magnitude 5.0 to 5.5 event could occur virtually anywhere at any time throughout the region. Earthquakes occur in Illinois all the time, although damaging quakes are very infrequent. Illinois earthquakes causing minor damage occur on average every 20 years, although the actual timing is extremely variable. Most recently, a magnitude 5.2 earthquake shook southeastern Illinois on April 18, 2008, causing minor damage in the Mt Carmel, IL area. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years.

First on the list of historical earthquakes that have affected Illinois and first on the list on continuing earthquake threats at present and into the future is seismic activity on the New Madrid Seismic Zone of south-eastern Missouri. On December 16, 1811 and January 23 and February 7 of 1812, three earthquakes struck the central U.S. with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment *(sand blows)* over an area of >10,500 km^2, and uplift of a 50 km by 23 km zone (the Lake County uplift). The shaking rang church bells in Boston, collapsed scaffolding on the

Capitol in Washington, D.C., and was felt over a total area of over 10 million km^2 (the largest felt area of any historical earthquake). Of all the historical earthquakes that have struck the U.S., an 1811-style event would do the most damage if it recurred today.

The New Madrid earthquakes are especially noteworthy because the seismic zone is in the center of the North American Plate. Such intraplate earthquakes are felt, and do damage, over much broader areas than comparable earthquakes at plate boundaries. The precise driving force responsible for activity on the New Madrid seismic zone is not known, but most scientists infer that it is compression transmitted across the North American Plate. The compression is focused on New Madrid because it is the site of a Paleozoic structure—the Reelfoot Rift—which is a zone of weakness in the crust.

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 (magnitude 7.5–8.0) is 7%–10% over the next 50 years (*USGS Fact Sheet 2006-3125*.) Frequent large earthquakes on the New Madrid seismic zone are geologically puzzling because the region shows relatively little deformation. Three explanations have been proposed: 1) recent seismological and geodetic activity is still a short-term response to the 1811–12 earthquakes; 2) activity is irregular or cyclic; or 3) activity began only in the recent geologic past. There is some dispute over how often earthquakes like the 1811–12 sequence occur. Many researchers estimate a recurrence interval of between 550 and 1100 years; other researchers suggest that either the magnitude of the 1811–12 earthquakes have been over-stated, or else the actual frequency of these events is less. It is fair to say, however, that even if the 1811–12 shocks were just magnitude ~7 events, they nonetheless caused widespread damage and would do the same if another such earthquake or earthquake sequence were to strike today.

[Above: New Madrid earthquakes and seismic zone modified from N. Pinter, 1993, Exercises in Active Tectonic history adapted from *Earthquake Information Bulletin*, 4(3), May-June 1972. *http://earthquake.usgs.gov/regional/states/illinois/history.php*]

The earliest reported earthquake in Illinois was in **1795**. This event was felt at Kaskaskia, IL for a minute and a half and was also felt in Kentucky. At Kaskaskia, subterranean noises were heard. Due to the sparse frontier population, an accurate location is not possible, and the shock may have actually originated outside the state.

An intensity VI-VII earthquake occurred on **April 12, 1883**, awakening several people in Cairo, IL. One old frame house was significantly damaged, resulting in slight injury to the inhabitants. This is the only record of injury in the state due to earthquakes.

On **October 31, 1895** a large M6.8 occurred at Charleston, Missouri, just south of Cairo. Strong shaking caused eruptions of sand and water at many places along a line roughly 30 km (20 mi) long. Damage occurred in six states, but most severely at Charleston, with cracked walls, windows shattered, broken plaster, and chimneys fallen. Shaking was felt in 23 states from Washington, D.C. to Kansas and from southernmost Canada to New Orleans, LA.

A Missouri earthquake on **November 4, 1905**, cracked walls in Cairo. Aftershocks were felt over an area of 100,000 square miles in nine states. In Illinois, it cracked the wall of the new education building in Cairo and a wall at Carbondale, IL.

Among the largest earthquakes occurring in Illinois was the **May 26, 1909** shock, which knocked over many chimneys at Aurora. It was felt over 500,000 square miles and strongly felt in Iowa and Wisconsin. Buildings swayed in Chicago where there was fear that the walls would collapse. Just under two months later, a second Intensity VII earthquake occurred on **July 18, 1909**, damaged chimneys in Petersburg, IL, Hannibal, MO, and Davenport, IA. Over twenty windows were broken, bricks loosened and plaster cracked in the Petersburg area. This event was felt over 40,000 square miles.

On **November 7, 1958**, a shock along the Indiana border resulted in damage at Bartelso, Dale and Maunie, IL. Plaster cracked and fell, and a basement wall and floor were cracked.

On **August 14, 1965**, a sharp but local shock occurred at Tamms, IL, a town of about 600 people. The magnitude 5 quake damaged chimneys, cracked walls, knocked groceries from the shelves, and muddied the water supply. Thunderous earth noises were heard. This earthquake was only felt within a 10 mile radius of Tamms, in communities such as Elco, Unity, Olive Branch, and Olmstead, IL. Six aftershocks were felt.

An earthquake of Intensity VII occurred on **November 9, 1968**. This magnitude 5.3 shock was felt over an area of 580,000 square miles in 23 states. There were reports of people in tall buildings in Ontario and Boston feeling the shock. Damage consisted of bricks being knocked from chimneys, broken windows, toppled television antennae, and cracked plaster. There were scattered reports of cracked foundations, fallen parapets, and overturned tombstones. Chimney damage was limited to buildings 30 to 50 years old. Many people were frightened. Church bells rang at Broughton and several other towns. Loud rumbling earthquake noise was reported in many communities.

Dozens of other shocks originating in Missouri, Arkansas, Kansas, Nebraska, Tennessee, Indiana, Ohio, Michigan, Kentucky, and Canada have been felt in Illinois without causing damage. There have been three earthquakes slightly greater than magnitude 5.0 and Intensity level VII which occurred in 1968, 1987 and 2008 and that were widely felt throughout southern Illinois and the midcontinent.

Above text adapted from *http://earthquake.usgs.gov/regional/states/illinois/history.php* and from *Seismicity of the United States, 1568-1989 (Revised), C.W. Stover and J.L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993.*

Geographic Location for Earthquake Hazard

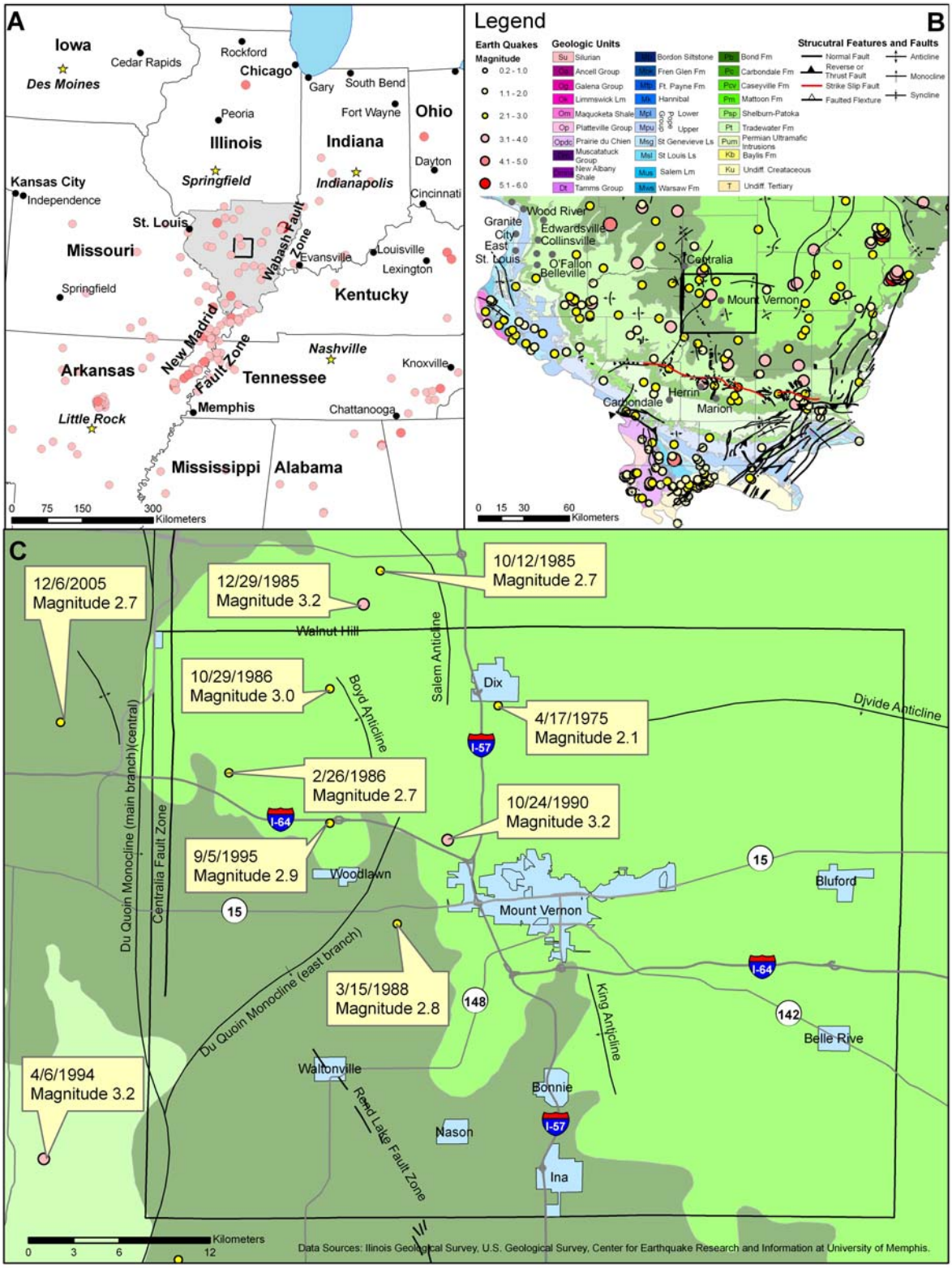
Jefferson County occupies a region susceptible to earthquakes (see above). Regionally, the two most significant zones of seismic activity are the New Madrid Seismic Zone and the Wabash Valley Fault System. The epicenters of six small earthquakes (M2.1–3.2) have been recorded in Jefferson County. This 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.

Return periods for large earthquakes within the New Madrid System are estimated to be ~500–1000 years; moderate quakes between magnitude 5.5 and 6.0 can recur within approximately 150 years or less. The Wabash Valley Fault System extends nearly the entire length of southern Illinois and has the potential to generate an earthquake of sufficient strength to cause damage between St. Louis, MO and Indianapolis, IN. The USGS and the Center for Earthquake Research and Information estimate the probability of a repeat of the 1811–1812 type earthquakes (magnitude 7.5–8.0) at 7%–10% and the probability of a magnitude 6.0 or larger at 25%–40% within the next 50 years.

Figure 4-10 depicts the following: a) Location of notable earthquakes in the Illinois region with inset of Jefferson County; b) Generalized geologic bedrock map with earthquake epicenters, geologic structures, and inset of Jefferson County; c) Geologic and earthquake epicenter map of Jefferson County.

Figure 4-10 a, b, and c: Jefferson County Earthquakes



Hazard Extent for Earthquake Hazard

The extent of the earthquake is countywide.

Calculated Risk Priority Index for Earthquake Hazard

Based on historical information as well as current USGS and SIU research and studies, future earthquakes in Jefferson County are possible. According to the RPI, earthquake is ranked as the number three hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	8	=	16

Vulnerability Analysis for Earthquake Hazard

This hazard could impact the entire jurisdiction equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake and can expect the same impacts within the affected area. To accommodate this risk this plan will consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g. damaged police station will no longer be able to serve the community). A complete list of all of the critical facilities, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Building Inventory

Table 4-8 shows building exposure 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 and loss of building function, which could result in indirect impacts (e.g. damaged homes will no longer be habitable, causing residence to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since a full inventory of infrastructure is not available for this plan, 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 fail or become impassable causing

risk to traffic. Typical scenarios are described to gauge the anticipated impacts of earthquakes in the county in terms of number and types of buildings and infrastructure.

The SIU-Polis team reviewed existing geological information and recommendations for earthquake scenarios. Three earthquake scenarios—two based on USGS modeled scenarios and one based on deterministic scenarios were developed to provide a reasonable basis for earthquake planning in Jefferson County. The two USGS analyses were a M7.7 event on the New Madrid fault zone and M7.1 earthquake on the Wabash Valley Seismic Zone. Shake maps provided by FEMA were used in HAZUS-MH to estimate losses for Jefferson County based on these events. The final scenario was a Moment Magnitude of 5.5 with the epicenter located in Jefferson County. Note that a deterministic scenario, in this context, refers to hazard or risk models based on specific scenarios without explicit consideration of the probability of their occurrences. This scenario was selected based upon a rupture on the Rend Lake Fault Zone, a local fault that presents a realistic earthquake scenario for planning purposes.

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. FEMA provided a NEHRP (National Earthquake Hazards Reduction Program) soil classification map for Illinois. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking.

FEMA provided a liquefaction map for Illinois. Low-lying areas in floodplains with a water table within five feet of the surface are particularly susceptible to liquefaction. These areas contain Class F soil types. For this analysis, a depth to water table of five meters was used.

An earthquake depth of 10.0 kilometers was selected based on input from Geophysicist Harvey Henson (SIU). HAZUS-MH also requires the user to define an attenuation function unless ground motion maps are supplied. Because Jefferson County has experienced smaller earthquakes, the decision was made to use the Toro et al. (1997) attenuation function.

The building losses are subdivided into two categories: 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 7.7 Magnitude Earthquake New Madrid Scenario

The results of the 7.7 New Madrid earthquake are depicted in Tables 4-24 and 4-25 and Figure 4-11. HAZUS-MH estimates that approximately 617 buildings will be at least moderately damaged. This is more than 4% of the total number of buildings in the region. It is estimated that no buildings will be damaged beyond repair.

The total building-related losses totaled $36.5 million; 16% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which comprised more than 47% of the total loss.

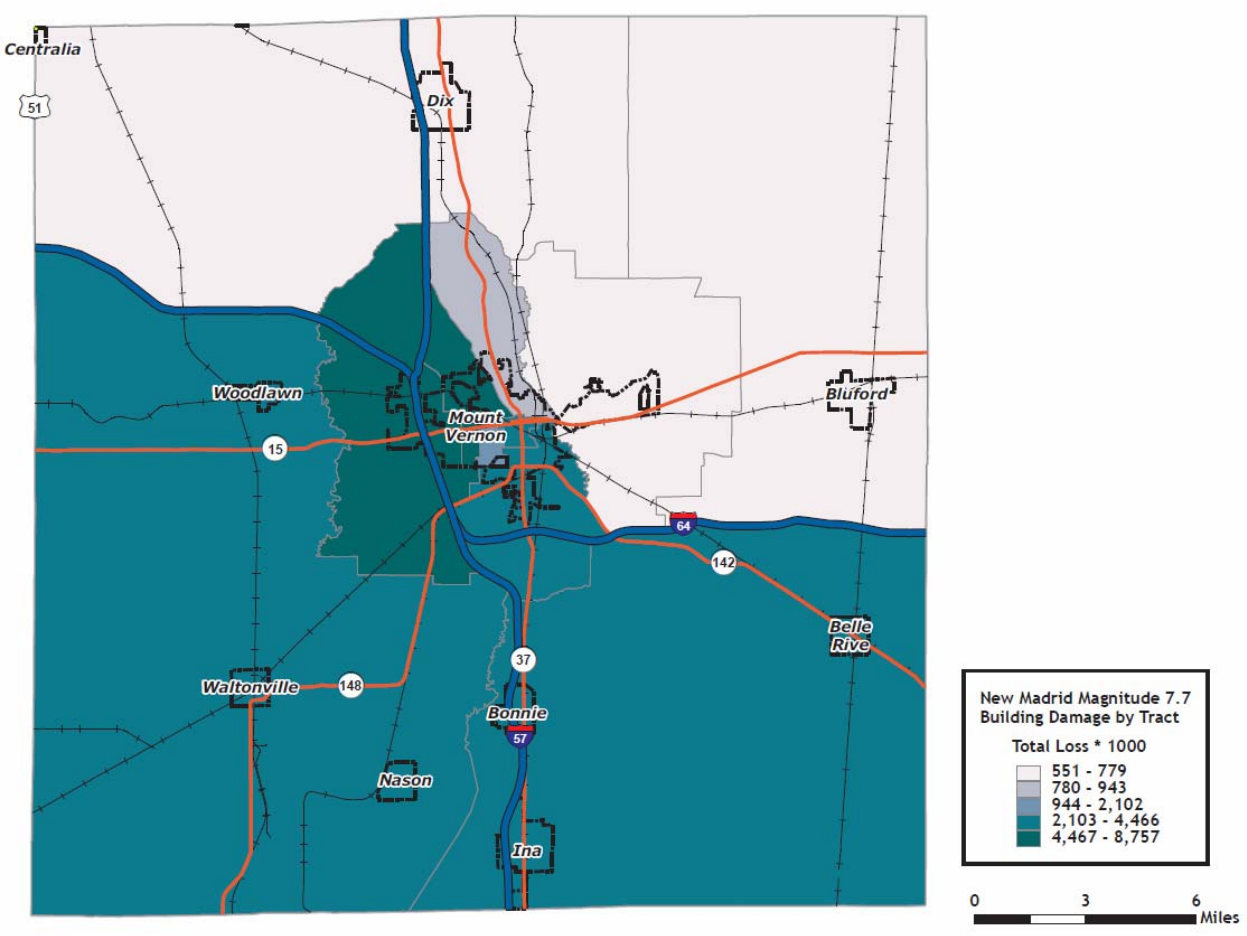
Table 4-24: New Madrid Scenario-Damages Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	11	0.08	3	0.15	1	0.23	0	0.48	0	0.30
Commercial	173	1.31	55	2.89	22	3.72	2	7.66	0	5.50
Education	10	0.07	2	0.13	1	0.14	0	0.18	0	0.27
Government	10	0.07	3	0.16	1	0.18	0	0.22	0	0.26
Industrial	38	0.29	10	0.51	5	0.83	0	1.84	0	0.89
Other Residential	2,149	16.24	765	40.35	375	62.86	9	43.25	0	4.10
Religion	24	0.18	5	0.26	2	0.31	0	0.56	0	0.61
Single Family	10,815	81.75	1,053	55.55	189	31.73	9	45.82	0	88.07
Total	**13,229**		**1,896**		**597**		**21**		**0**	

Table 4-25: New Madrid Scenario-Building Economic losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.05	2.28	0.06	0.12	2.50
	Capital-Related	0.00	0.02	1.58	0.04	0.03	1.67
	Rental	0.21	0.28	0.95	0.03	0.05	1.51
	Relocation	0.02	0.01	0.07	0.00	0.01	0.12
	Subtotal	**0.23**	**0.36**	**4.88**	**0.13**	**0.21**	**5.81**
Capital Stock Loses							
	Structural	1.28	0.93	1.64	0.28	0.42	4.55
	Non_Structural	6.56	3.45	4.66	0.88	1.29	16.83
	Content	3.47	1.03	3.03	0.61	0.94	9.08
	Inventory	0.00	0.00	0.09	0.13	0.02	0.24
	Subtotal	**11.31**	**5.41**	**9.42**	**1.90**	**2.67**	**30.69**
	Total	**11.53**	**5.77**	**14.30**	**2.02**	**2.88**	**36.50**

Figure 4-11: New Madrid Scenario-Building Economic Losses in Thousands of Dollars



New Madrid Scenario—Essential Facility Losses

Before the earthquake, the region had 1,023 care beds available for use. On the day of the earthquake, the model estimates that only 59 care beds (6%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 65% of the beds will be back in service. By day 30, 89% will be operational. The HAZUS-MH analysis calculated no essential facility losses for this event.

Results for 7.1 Magnitude Earthquake Wabash Valley Scenario

The results of the 7.1 Wabash Valley earthquake are depicted in Table 4-26, Table 4-27, and Figure 4-12. HAZUS-MH estimates that approximately 60 buildings will be at least moderately damaged. This is 0% of the total number of buildings in the region. It is estimated that no buildings will be damaged beyond repair.

The total building related losses totaled $10.41 million; 1% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up more than 59% of the total loss.

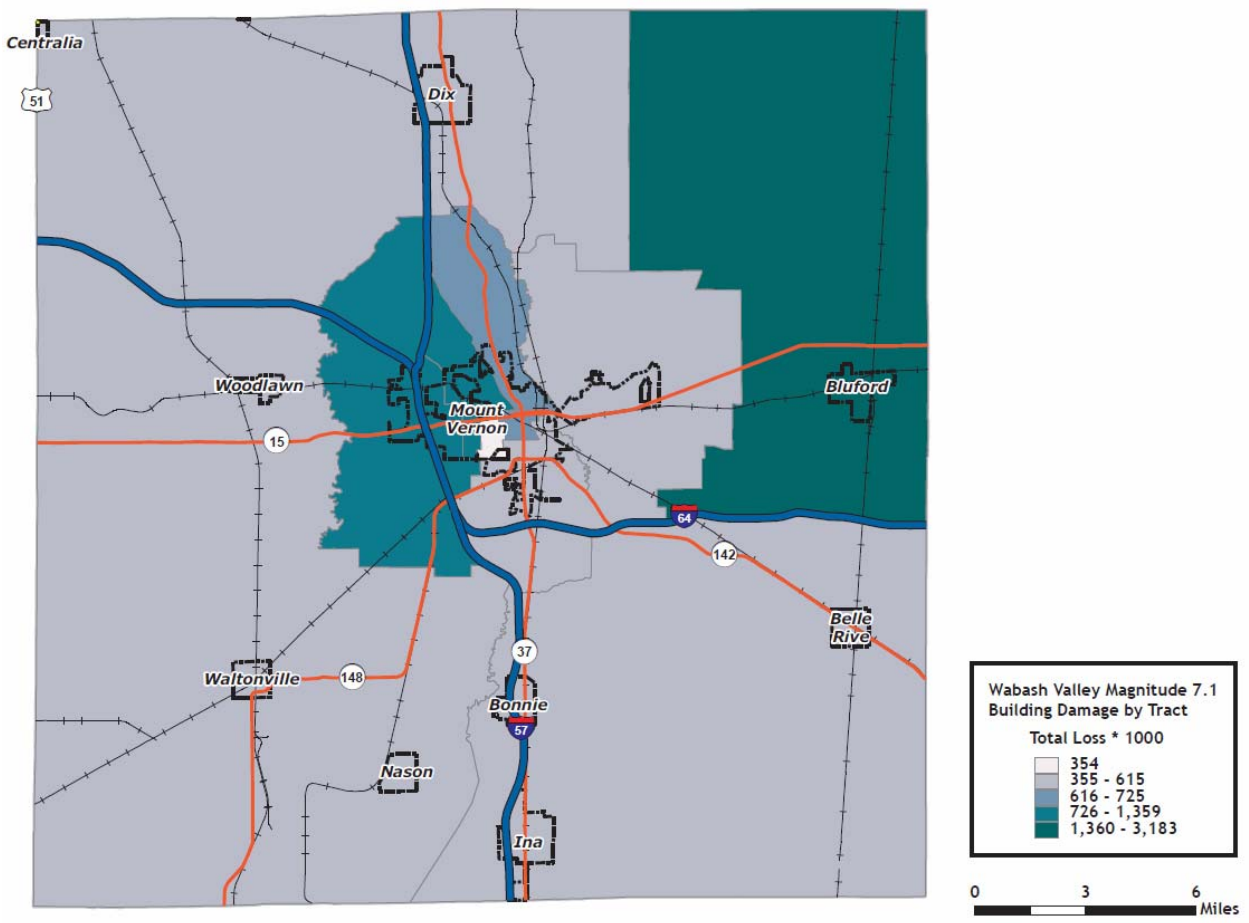
Table 4-26: Wabash Valley Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	15	0.10	0	0.09	0	0.14	0	0.30	0	0.16
Commercial	248	1.62	3	0.89	0	0.78	0	1.25	0	0.82
Education	13	0.08	0	0.10	0	0.12	0	0.24	0	0.29
Government	14	0.09	0	0.08	0	0.09	0	0.17	0	0.17
Industrial	52	0.34	1	0.30	0	0.49	0	1.11	0	0.37
Other Residential	3,082	20.12	181	49.13	35	59.33	0	17.82	0	0.23
Religion	30	0.20	1	0.25	0	0.33	0	0.74	0	0.70
Single Family	11,862	77.46	181	49.17	23	38.73	1	78.38	0	97.26
Total	**15,314**		**368**		**60**		**1**		**0**	

Table 4-27: Wabash Valley Scenario-Building Economic losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.00	0.03	0.00	0.02	0.04
	Capital-Related	0.00	0.00	0.02	0.00	0.01	0.03
	Rental	0.03	0.01	0.02	0.00	0.00	0.06
	Relocation	0.00	0.00	0.00	0.00	0.00	0.01
	Subtotal	**0.03**	**0.01**	**0.07**	**0.00**	**0.03**	**0.14**
Capital Stock Loses							
	Structural	0.19	0.07	0.04	0.01	0.07	0.38
	Non_Structural	2.69	0.89	1.15	0.33	0.64	5.71
	Content	1.83	0.38	1.02	0.24	0.61	4.08
	Inventory	0.00	0.00	0.03	0.05	0.01	0.09
	Subtotal	**4.72**	**1.34**	**2.24**	**0.63**	**1.34**	**10.27**
	Total	**4.75**	**1.36**	**2.30**	**0.64**	**1.36**	**10.41**

Figure 4-12: Wabash Valley Scenario-Building Economic Losses in Thousands of Dollars



Wabash Valley Scenario—Essential Facility Losses

Before the earthquake, the region had 1,023 care beds available for use. On the day of the earthquake, the model estimates that only 511 care beds (50%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 97% of the beds will be back in service. By day 30, 100% will be operational. The HAZUS-MH analysis calculated no essential facility losses for this event.

Results for 5.5 Magnitude Earthquake in Jefferson County

The results of the initial analysis, the 5.5 magnitude earthquake with an epicenter in the center of Waltonville, are depicted in Tables 4-28 and 4-29 and Figure 4-13. HAZUS-MH estimates that approximately 664 buildings will be at least moderately damaged. This is more than 4% of the total number of buildings in the region. It is estimated that 11 buildings will be damaged beyond repair.

The total building related losses totaled $50.18 million; 10% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which comprised more than 55% of the total loss.

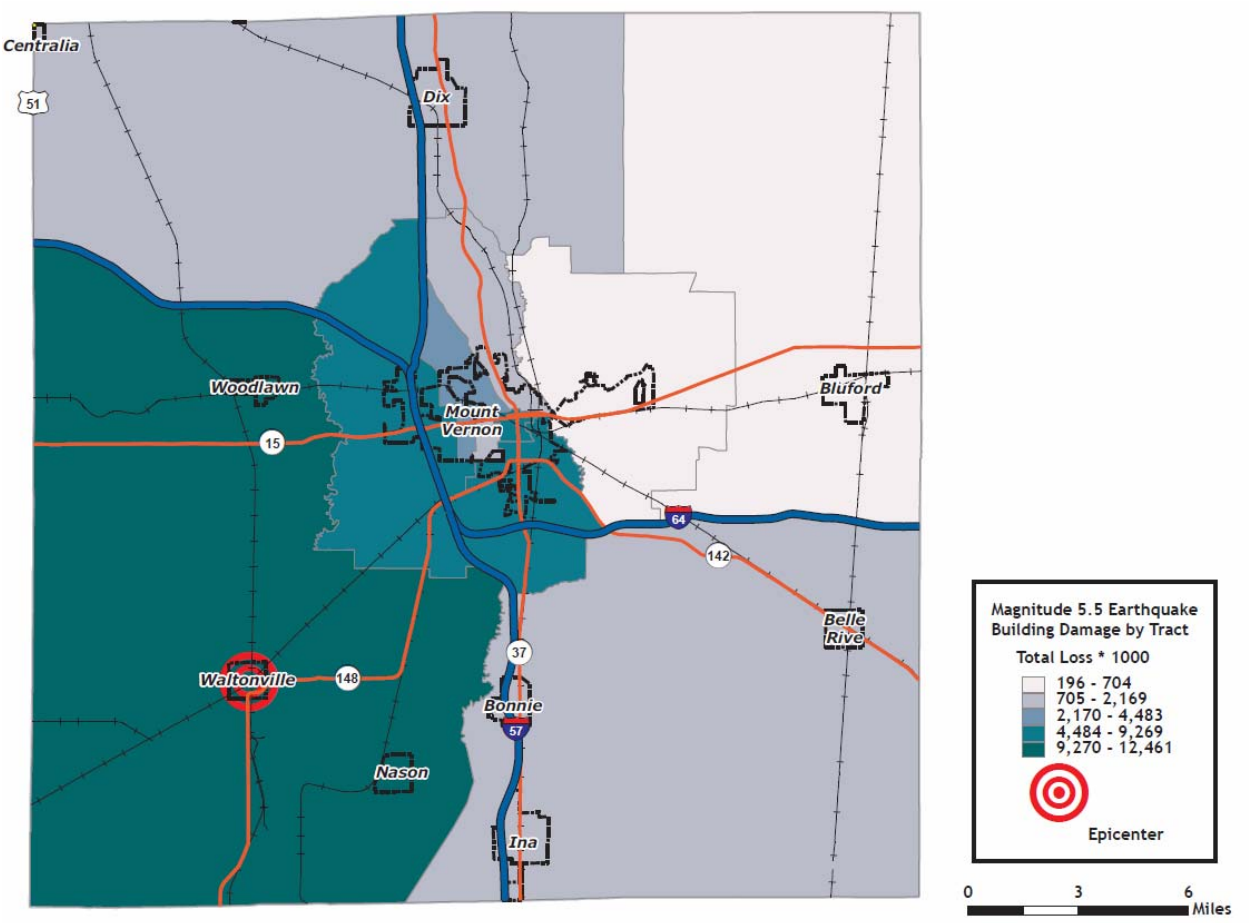
Table 4-28: Jefferson County 5.5M Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	12	0.09	1	0.11	1	0.15	0	0.25	0	0.19
Commercial	208	1.52	26	1.95	14	2.47	3	3.88	0	3.32
Education	11	0.08	1	0.08	1	0.11	0	0.17	0	0.22
Government	11	0.08	2	0.12	1	0.17	0	0.25	0	0.33
Industrial	44	0.32	5	0.38	3	0.59	1	0.99	0	0.56
Other Residential	2,627	19.13	403	29.88	245	43.23	22	25.95	1	9.97
Religion	26	0.19	3	0.23	2	0.30	0	0.51	0	0.56
Single Family	10,792	78.60	907	67.25	301	52.98	58	67.99	10	84.85
Total	**13,730**		**1,348**		**568**		**85**		**11**	

Table 4-29: Jefferson County 5.5M Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.06	1.54	0.06	0.13	1.79
	Capital-Related	0.00	0.03	1.17	0.04	0.04	1.27
	Rental	0.45	0.32	0.82	0.02	0.06	1.67
	Relocation	0.05	0.01	0.05	0.00	0.02	0.14
	Subtotal	**0.50**	**0.42**	**3.59**	**0.12**	**0.24**	**4.87**
Capital Stock Loses							
	Structural	2.48	0.74	1.56	0.27	0.55	5.60
	Non_Structural	11.98	4.10	5.80	1.38	1.84	25.11
	Content	6.05	1.41	4.32	1.06	1.35	14.19
	Inventory	0.00	0.00	0.15	0.24	0.03	0.43
	Subtotal	**20.50**	**6.26**	**11.84**	**2.95**	**3.76**	**45.31**
	Total	**21.00**	**6.67**	**15.43**	**3.08**	**4.01**	**50.18**

Figure 4-13: Jefferson County 5.5M Scenario-Building Economic Losses in Thousands of Dollars



Jefferson County 5.5M Scenario—Essential Facility Losses

Before the earthquake, the region had 1,023 care beds available for use. On the day of the earthquake, the model estimates that only 257 care beds (25%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 84% of the beds will be back in service. By day 30, 96% will be operational. According to the HAZUS-MH analysis this earthquake event would damage 10 schools and 3 fire stations.

Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

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

Analysis of Community Development Trends

Community development will occur outside of the low-lying areas in floodplains with a water table within five feet of grade which are susceptible to liquefaction.

4.4.4 Thunderstorm Hazard

Hazard Definition for Thunderstorm Hazard

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

- Hail of diameter 0.75 inches or higher
- Frequent and dangerous lightning
- Wind speeds equal to or greater than 58 mph

Hail

Hail can be a product of a strong thunderstorm. Hail usually falls near the center of a storm; however strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in a broader distribution. Hailstones range from pea-sized to baseball-sized, but hailstones larger than softballs have been reported on rare occasions.

Lightning

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

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are a fairly common occurrence across 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 for Thunderstorm Hazard

The NCDC database reported 46 hailstorms in Jefferson County since 1955. Hailstorms occur nearly every year in the late spring and early summer months. The most recent significant occurrence was in April 2007 when 1.75-inch hail fell in the region. Large hail to the size of golf balls occurred west of Mount Vernon along Interstate 64. The golf-ball hail was reported at mile marker 70, approximately one mile east of the Woodlawn exit. Quarter-size hail fell in the Mount Vernon area.

Numerous thunderstorms preceded a strong cold front that moved southeast across the region. The storms organized into lines along outflow boundaries preceding the initial storms. Hail was the primary severe weather type.

Jefferson County hailstorms are listed in Table 4-30; additional details for NCDC events are included in Appendix D.

Table 4-30: Jefferson County Hailstorms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	11/15/1955	Hail	2.00 in.	0	0	0	0
Jefferson	3/29/1974	Hail	0.75 in.	0	0	0	0
Jefferson	4/3/1989	Hail	2.00 in.	0	0	0	0
Jefferson	4/3/1989	Hail	2.00 in.	0	0	0	0
Jefferson	9/29/1994	Hail	1.00 in.	0	0	0	0
Mount Vernon	5/13/1995	Hail	0.75 in.	0	0	0	0
Scheller	4/19/1996	Hail	0.75 in.	0	0	0	0
Scheller	8/15/1996	Hail	1.00 in.	0	0	0	0
Scheller	8/26/1996	Hail	0.75 in.	0	0	0	0
Scheller	3/28/1997	Hail	0.75 in.	0	0	0	0
Mt Vernon	3/28/1997	Hail	1.75 in.	0	0	0	0
Mt Vernon	5/5/1999	Hail	3.50 in.	0	0	50K	0
Ina	6/4/1999	Hail	1.00 in.	0	0	0	0
Mt Vernon	4/7/2000	Hail	1.75 in.	0	0	0	0
Waltonville	8/18/2001	Hail	1.75 in.	0	0	0	0
Ina	8/18/2001	Hail	1.00 in.	0	0	0	0
Ina	8/25/2001	Hail	1.00 in.	0	0	0	0
Mt Vernon	4/12/2002	Hail	1.50 in.	0	0	0	0
Dix	4/21/2002	Hail	1.00 in.	0	0	0	0
Dix	4/24/2002	Hail	1.75 in.	0	0	0	0
Nason	4/24/2003	Hail	1.00 in.	0	0	0	0
Mt Vernon	4/24/2003	Hail	2.75 in.	0	0	0	0
Mt Vernon	5/4/2003	Hail	1.75 in.	0	0	0	0
Ina	5/9/2003	Hail	2.50 in.	0	0	0	0
Bonnie	5/25/2004	Hail	0.88 in.	0	0	0	0
Mt Vernon	5/26/2004	Hail	1.75 in.	0	0	0	0
Mt Vernon	5/26/2004	Hail	0.88 in.	0	0	0	0
Woodlawn	5/27/2004	Hail	0.88 in.	0	0	0	0
Mt Vernon	7/5/2004	Hail	0.75 in.	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Bluford	7/22/2004	Hail	0.75 in.	0	0	0	0
Mt Vernon	11/1/2004	Hail	0.75 in.	0	0	0	0
Waltonville	4/12/2005	Hail	1.00 in.	0	0	0	0
Ina	4/12/2005	Hail	0.88 in.	0	0	0	0
Bonnie	4/12/2005	Hail	1.00 in.	0	0	0	0
Mt Vernon	4/21/2005	Hail	0.75 in.	0	0	0	0
Mt Vernon	4/22/2005	Hail	1.00 in.	0	0	0	0
Woodlawn	2/16/2006	Hail	1.00 in.	0	0	0	0
Mt Vernon	3/11/2006	Hail	1.75 in.	0	0	0	0
Mt Vernon	3/12/2006	Hail	0.75 in.	0	0	0	0
Woodlawn	4/7/2006	Hail	1.75 in.	0	0	0	0
Bonnie	4/7/2006	Hail	1.00 in.	0	0	0	0
Woodlawn	4/30/2006	Hail	0.75 in.	0	0	0	0
Waltonville	5/3/2006	Hail	0.75 in.	0	0	0	0
Mt Vernon	7/21/2006	Hail	0.88 in.	0	0	0	0
Mt Vernon	4/3/2007	Hail	1.75 in.	0	0	0	0
Ina	10/18/2007	Hail	1.00 in.	0	0	0	0

Source: NCDC

* 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 one occurrence of a significant lightning strike in Jefferson County since 1950. On August 26, 2006, lightning struck a school in Mount Vernon, causing roof damage.

Jefferson County lightning strikes are listed in Table 4-31; additional details for NCDC events are included in Appendix D. Lightning occurs in Jefferson County every year. The following list only represents events that were recorded by the NCDC.

Table 4-31: Jefferson County Lightning Strikes*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Mt Vernon	8/26/1996	Lightning	N/A	0	0	5K	0

Source: NCDC

* 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 identified 94 wind storms reported since 1960. These storms have resulted in seven injures and nearly $14 million dollars in property damage in Jefferson and adjacent counties. On multiple occasions in the past 50 years, trees have been uprooted by severe winds in Jefferson County. Many of the displaced trees landed on homes and automobiles. In addition, several of these extreme wind events resulted in damage to multiple buildings unable to withstand the force produced by the wind speeds.

For example, on February 17, 2008, strong south winds gusted to 50 mph. The peak wind gust was 52 mph at Carbondale, 51 mph at Marion, 53 mph at Mt. Carmel, 47 mph at Cairo and Metropolis, 46 mph at Carmi and Mt. Vernon, and 45 mph at Harrisburg. The strong winds occurred in advance of a strong cold front that moved across southern Illinois during the late afternoon. The strong winds brought down some tree limbs that were laden with ice from the February 11 ice storm. This caused a setback in efforts to restore power following the ice storm.

As shown in Table 4-32, wind storms have historically occurred year-round with the greatest frequency and damage in April through August.

Table 4-32: Jefferson County Wind Storms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	4/17/1960	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	6/28/1960	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	6/22/1965	Tstorm Winds	63 kts.	0	0	0	0
Jefferson	8/26/1967	Tstorm Winds	52 kts.	0	0	0	0
Jefferson	7/3/1969	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	4/13/1972	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	3/29/1974	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	6/9/1974	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	6/9/1974	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	9/28/1974	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	4/18/1975	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	1/13/1976	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	7/21/1976	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	10/1/1979	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	7/20/1981	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	4/16/1982	Tstorm Winds	55 kts.	0	0	0	0
Jefferson	5/30/1982	Tstorm Winds	72 kts.	0	0	0	0
Jefferson	6/8/1982	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	6/8/1982	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	5/1/1983	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	3/15/1984	Tstorm Winds	60 kts.	0	0	0	0
Jefferson	7/1/1986	Tstorm Winds	60 kts.	0	0	0	0
Jefferson	7/31/1986	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	8/3/1991	Tstorm Winds	0 kts.	0	0	0	0
Jefferson	11/29/1991	Tstorm Winds	0 kts.	0	0	0	0
Mount Vernon	4/15/1994	Tstorm Winds	N/A	0	0	5K	0
Jefferson	9/30/1994	Tstorm Winds	N/A	0	0	50K	0
Mt.vernon	5/18/1995	Tstorm Winds	N/A	0	0	2K	0
Dix	8/9/1995	Tstorm Winds	N/A	0	0	0	0
Mt.vernon	8/9/1995	Tstorm Winds	N/A	0	0	0	0
Jefferson	11/11/1995	High Winds	0 kts.	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	3/19/1996	High Wind	50 kts.	0	0	5K	0
Bonnie	4/19/1996	Tstorm Winds	0 kts.	0	0	1K	0
Mt Vernon	7/19/1996	Tstorm Winds	52 kts.	0	0	0	0
Waltonville	8/26/1996	Tstorm Winds	0 kts.	0	0	5K	0
Mt Vernon	10/17/1996	Tstorm Winds	50 kts.	0	0	0	0
Jefferson	10/22/1996	High Wind	0 kts.	0	0	28K	0
Mt Vernon	10/22/1996	Tstorm Winds	0 kts.	0	0	40K	0
Jefferson	4/30/1997	High Wind	52 kts.	0	0	20K	0
Mt Vernon	6/21/1997	Tstorm Winds	50 kts.	0	0	0	0
Mt Vernon	7/14/1997	Tstorm Winds	52 kts.	0	0	15K	0
Dix	5/22/1998	Tstorm Winds	52 kts.	0	0	0	0
Dix	6/18/1998	Tstorm Winds	52 kts.	0	0	0	0
Dix	6/29/1998	Tstorm Winds	52 kts.	0	0	7K	0
Jefferson	11/10/1998	High Wind	50 kts.	0	0	20K	0
Ina	1/17/1999	Tstorm Winds	0 kts.	0	0	30K	0
Jefferson	2/7/1999	Strong Winds	N/A	0	0	23K	0
Scheller	5/17/1999	Tstorm Winds	52 kts.	0	0	10K	0
Jefferson	4/16/2000	Tstorm Winds	0 kts.	0	0	40K	0
Jefferson	4/20/2000	Wind	N/A	0	0	0	0
Mt Vernon	8/17/2000	Tstorm Winds	0 kts.	0	1	30K	0
Mt Vernon	6/5/2001	Tstorm Winds	50 kts.	0	0	0	0
Waltonville	8/18/2001	Tstorm Winds	65 kts.	0	0	25K	0
Dix	8/18/2001	Tstorm Winds	50 kts.	0	0	0	0
Jefferson	8/18/2001	Tstorm Winds	50 kts.	0	0	5K	0
Nason	8/25/2001	Tstorm Winds	52 kts.	0	0	0	0
Jefferson	10/24/2001	Tstorm Winds	52 kts.	0	0	20K	0
Jefferson	11/29/2001	Strong Wind	N/A	0	1	10K	0
Jefferson	3/9/2002	Wind	N/A	0	0	3K	0
Nason	4/27/2002	Tstorm Winds	50 kts.	0	0	0	0
Mt Vernon	5/9/2002	Tstorm Winds	52 kts.	0	0	25K	0
Mt Vernon	5/25/2002	Tstorm Winds	50 kts.	0	0	0	0
Bluford	4/28/2003	Tstorm Winds	60 kts.	0	0	100K	0
Dix	6/10/2003	Tstorm Winds	50 kts.	0	0	0	0
Belle Rive	5/25/2004	Tstorm Winds	65 kts.	0	0	15K	0
Jefferson	5/27/2004	Tstorm Winds	52 kts.	0	0	0	0
Mt Vernon	5/30/2004	Tstorm Winds	52 kts.	0	0	10K	0
Jefferson	7/5/2004	Tstorm Winds	50 kts.	0	0	0	0
Mt Vernon	7/5/2004	Tstorm Winds	52 kts.	0	0	0	0
Scheller	7/14/2004	Tstorm Winds	50 kts.	0	0	1K	0
Mt Vernon	11/11/2004	Heavy Rain	N/A	0	0	0	0
Woodlawn	1/5/2005	Heavy Rain	N/A	0	0	2K	0
Bluford	1/13/2005	Tstorm Winds	52 kts.	0	0	10K	0
Woodlawn	4/22/2005	Tstorm Winds	63 kts.	0	0	0	0
Mt Vernon	6/8/2005	Tstorm Winds	50 kts.	0	0	2K	0
Mt Vernon	8/10/2005	Tstorm Winds	66 kts.	0	0	3K	0
Woodlawn	8/13/2005	Tstorm Winds	50 kts.	0	0	3K	0
Mt Vernon	8/14/2005	Heavy Rain	N/A	0	0	0	0
Jefferson	11/15/2005	Strong Wind	N/A	0	0	7K	0
Jefferson	1/8/2006	Strong Wind	N/A	0	0	19K	0
Jefferson	1/19/2006	Strong Wind	N/A	0	0	19K	0
Jefferson	2/16/2006	Strong Wind	N/A	0	0	14K	0
Mt Vernon	3/11/2006	Tstorm Winds	56 kts.	0	0	0	0
Boyd	4/2/2006	Tstorm Winds	61 kts.	0	0	100K	0
Mt Vernon	5/2/2006	Heavy Rain	N/A	0	0	0	0
Mt Vernon	6/10/2006	Tstorm Winds	50 kts.	0	0	4K	0
Jefferson	7/21/2006	Tstorm Winds	78 kts.	0	5	13.0M	0
Scheller	2/24/2007	Heavy Rain	N/A	0	0	0K	0
Woodlawn	8/15/2007	Tstorm Wind	N/A	0	0	5K	0
Ina	10/18/2007	Tstorm Wind	N/A	0	0	2K	0
Mt Vernon	1/29/2008	Tstorm Wind	N/A	0	0	40K	0
Ina	2/5/2008	Tstorm Wind	N/A	0	0	20K	0
Belle Rive	2/5/2008	Tstorm Wind	N/A	0	0	180K	0
Jefferson	2/17/2008	Strong Wind	N/A	0	0	1K	0

Source: NCDC

* 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 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 listed previously varies in terms of the extent of the storm, the wind speed, and the size of hailstones. Thunderstorms can occur at any location within the county.

Calculated Risk Priority Index for Thunderstorm Hazard

Based on historical information, the probability of future high wind damage is highly likely. High winds with widely varying magnitudes are expected to happen. According to the RPI, thunderstorms and high wind damage ranked as the number two hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	4	=	16

Vulnerability Analysis for Thunderstorm Hazard

Severe thunderstorms are an evenly distributed threat across the entire jurisdiction; therefore, the entire county's population and all buildings are susceptible to severe thunderstorms and can expect the same impacts. This plan will therefore consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Jefferson County are discussed in types and numbers in Table 4-8.

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, debris (trees or limbs) causing damage, roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of function of the facility (e.g. a damaged police station will no longer be able to serve the community). Table 4-7 lists the types and numbers of all essential facilities in the area. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Building Inventory

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

Infrastructure

During a severe thunderstorm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a severe thunderstorm. 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 fail or become impassable causing risk to traffic.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

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

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warning of approaching storms are also vital to preventing the loss of property and ensuring the safety of Jefferson County residents.

4.4.5 Winter Storm Hazard

Hazard Definition for Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and strong weather conditions. This may include one or more of the following conditions: 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, and death.

Ice (glazing) and Sleet Storms

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves frozen raindrops that bounce when they hit the ground or other objects. 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.

The most damaging winter storms in southern Illinois have been ice storms. Ice storms occur when moisture-laden gulf air converges with the northern jet stream causing strong winds and heavy precipitation. This precipitation takes the form of freezing rain coating power and communication lines and trees with heavy ice. The winds will then cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication. In the past few decades, including the winter of 2007–08, numerous ice storm events have occurred in southern Illinois.

Snow Storms

Significant snow storms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. A blizzard is categorized as a snow storm with winds of 35 miles per hour or greater and/or visibility of less than ¼ mile for three or more hours. Blizzards are the most dramatic and perilous of all winter storm events. Most snow within a blizzard is in the form of fine, powdery particles, which are wind-blown in such great quantities that visibility is reduced to only a few feet. Blizzards have the potential to result in property damage.

Illinois has repeatedly been struck by blizzards, although they are less common in the southern part of the state. Blizzard conditions can cause power outages, loss of communication, and make transportation impossible. The blowing of snow can reduce visibility to less than ¼ mile, resulting in disorientation that can make even travel by foot dangerous.

Severe Cold

Severe cold is characterized by the ambient air temperature that may drop to 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hyperthermia. 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), which can lower the time it takes for frostbite and hypothermia to affect a person's body.

Previous Occurrences for Winter Storm Hazard

The NCDC database identified 76 winter storm and extreme cold events for Jefferson County since 1994, the most recent event occurring in February 2008.

Low pressure organized over Louisiana, spreading precipitation northeast along a warm front that extended into the Ohio Valley. Arctic high pressure over the Great Lakes region produced a cold northeast wind flow in the low levels. This low-level cold air was responsible for sleet and freezing rain.

Although this was the second ice storm in only ten days, ice accumulations were less serious than the crippling ice storm on February 11. One-quarter to one-half inch of ice accumulated south and east of Marion. From the Marion/Carbondale area north and west, up to 2.5 inches of sleet fell. Freezing rain coated surfaces with less than a quarter inch of ice. Many schools and businesses were closed for this second round of ice.

The NCDC winter storms for Jefferson County are listed in Table 4-33. Additional details for NCDC events are included in Appendix D.

Table 4-33: Winter Storm Events*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	3/8/1994	Heavy Snow	N/A	0	0	500K	0
Jefferson	12/8/1995	Snow	N/A	0	0	0	0
Jefferson	12/9/1995	Cold Wave	N/A	0	0	0	0
Jefferson	1/2/1996	Winter Storm	N/A	0	0	0	0
Jefferson	1/6/1996	Winter Storm	N/A	0	0	0	0
Jefferson	2/2/1996	Extreme Cold	N/A	0	0	0	0
Jefferson	12/16/1996	Winter Storm	N/A	0	0	0	0
Jefferson	1/8/1997	Winter Storm	N/A	0	0	0	0
Jefferson	1/10/1997	Extreme Windchill	N/A	1	0	0	0
Jefferson	1/15/1997	Ice Storm	N/A	0	0	0	0
Jefferson	2/7/1997	Winter Storm	N/A	0	0	0	0
Jefferson	4/10/1997	Heavy Snow	N/A	0	0	0	0
Jefferson	4/18/1997	Frost	N/A	0	0	0	0
Jefferson	11/13/1997	Winter Storm	N/A	0	0	0	0
Jefferson	12/8/1997	Snow	N/A	0	0	0	0
Jefferson	12/30/1997	Snow	N/A	0	0	0	0
Jefferson	1/22/1998	Snow	N/A	0	0	0	0
Jefferson	12/21/1998	Freezing Rain	N/A	0	0	0	0
Jefferson	12/30/1998	Snow	N/A	0	0	0	0
Jefferson	1/1/1999	Ice Storm	N/A	0	0	150K	0
Jefferson	1/8/1999	Ice Storm	N/A	0	0	0	0
Jefferson	3/14/1999	Heavy Snow	N/A	0	0	0	0
Jefferson	1/17/2000	Freezing Rain	N/A	0	0	0	0
Jefferson	1/22/2000	Snow	N/A	0	0	0	0
Jefferson	3/11/2000	Heavy Snow	N/A	0	0	0	0
Jefferson	4/9/2000	Frost	N/A	0	0	0	0
Jefferson	10/9/2000	Frost	N/A	0	0	0	0
Jefferson	12/12/2000	Extreme Cold	N/A	0	0	0	0
Jefferson	12/13/2000	Winter Storm	N/A	0	0	0	0
Jefferson	12/15/2000	Freezing Rain	N/A	0	0	0	0
Jefferson	1/1/2001	Extreme Cold	N/A	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Jefferson	1/26/2001	Freezing Rain	N/A	0	0	0	0
Jefferson	4/18/2001	Frost	N/A	0	0	0	0
Jefferson	2/25/2002	Snow	N/A	0	0	0	0
Jefferson	12/4/2002	Winter Storm	N/A	0	0	0	0
Jefferson	12/23/2002	Winter Storm	N/A	0	0	0	0
Jefferson	1/22/2003	Winter Weather/mix	N/A	0	0	0	0
Jefferson	1/23/2003	Extreme Cold/wind Chill	N/A	0	0	0	0
Jefferson	2/16/2003	Winter Storm	N/A	0	0	0	0
Jefferson	2/23/2003	Heavy Snow	N/A	0	0	0	0
Jefferson	10/3/2003	Frost/freeze	N/A	0	0	0	0
Jefferson	12/13/2003	Winter Weather/mix	N/A	0	0	0	0
Jefferson	1/25/2004	Ice Storm	N/A	0	0	0	0
Jefferson	1/27/2004	Winter Weather/mix	N/A	0	0	0	0
Jefferson	1/29/2004	Winter Weather/mix	N/A	0	0	0	0
Jefferson	2/5/2004	Heavy Snow	N/A	0	0	0	0
Jefferson	12/22/2004	Winter Storm	N/A	1	1	100K	0
Jefferson	12/23/2004	Extreme Cold/wind Chill	N/A	1	0	0	0
Jefferson	1/28/2005	Winter Weather/mix	N/A	0	0	0	0
Jefferson	2/23/2005	Winter Weather/mix	N/A	0	0	0	0
Woodlawn	4/12/2005	Funnel Cloud	N/A	0	0	0	0
Jefferson	5/4/2005	Frost/freeze	N/A	0	0	0	0
Jefferson	10/28/2005	Frost/freeze	N/A	0	0	0	0
Jefferson	12/8/2005	Winter Storm	N/A	0	0	0	0
Jefferson	2/8/2006	Winter Weather/mix	N/A	0	0	0	0
Jefferson	2/11/2006	Winter Weather/mix	N/A	0	0	0	0
Jefferson	2/18/2006	Winter Weather/mix	N/A	0	0	0	0
Jefferson	10/13/2006	Frost/freeze	N/A	0	0	0	0
Jefferson	1/20/2007	Winter Weather	N/A	0	0	0	0
Jefferson	2/1/2007	Winter Weather	N/A	0	0	0	0
Jefferson	2/13/2007	Winter Weather	N/A	0	0	0	0
Jefferson	2/17/2007	Winter Weather	N/A	0	0	0	0
Jefferson	4/5/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	4/6/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	4/7/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	4/8/2007	Frost/freeze	N/A	0	0	0	3.0M
Jefferson	4/9/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	10/29/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	11/7/2007	Frost/freeze	N/A	0	0	0	0
Jefferson	12/6/2007	Winter Weather	N/A	0	0	0	0
Jefferson	12/15/2007	Winter Weather	N/A	0	0	0	0
Jefferson	12/15/2007	Winter Weather	N/A	0	0	0	0
Jefferson	1/31/2008	Winter Storm	N/A	0	0	0	0
Jefferson	2/1/2008	Winter Storm	N/A	0	1	0	0
Jefferson	2/1/2008	Winter Weather	N/A	0	2	0	0
Jefferson	2/21/2008	Winter Storm	N/A	0	0	0	0

Source: NCDC

* 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 Winter Storm Hazard

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

Hazard Extent for Winter Storm Hazard

The extent of the historical winter storms listed previously varies in terms of storm extent, temperature, and ice or snowfall. Severe winter storms affect the entire jurisdiction equally.

Calculated Risk Priority Index for Winter Storm Hazard

Based on historical information, the probability of future winter storms is likely. Winter storms of varying magnitudes are expected to happen. According to the RPI, winter storms ranked fifth by the Jefferson County Planning Team.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Winter Storm Hazard

Winter storm impacts are evenly distributed across the jurisdiction; therefore the entire county is vulnerable to winter storms and can expect the same impacts within the affected area. The building exposure for Jefferson County, as determined from the building inventory, is included in Table 4-8.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as any other buildings within the jurisdiction. These impacts include loss of gas or electricity from broken or damaged utility lines, roads and railways damaged or impassable, broken water pipes, and roof collapse from heavy snow. Table 4-7 lists the types and numbers of the essential facilities in the area. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

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 building stock within the county are similar to the damages expected to the critical facilities, including loss of gas of electricity from broken or damaged utility lines, roads and railways damaged or impassable, broken water pipes, and roof collapse from heavy snow.

Infrastructure

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

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

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

Analysis of Community Development Trends

Because the winter storm events are regional in nature, future development will be impacted across the county.

4.4.6 Hazardous Materials Storage and Transport Hazard

Hazard Definition for Hazardous Materials Storage and Transport Hazard

Explosions result from the ignition of volatile materials such as petroleum products, natural gas and other flammable gases, hazardous materials/chemicals and dust, and explosive devices. 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 for Hazardous Materials Storage and Transport Hazard

Jefferson County has not experienced a significant or large-scale hazardous material incident at a fixed site or transportation route that has resulted in multiple deaths or serious injuries.

Geographic Location for Hazardous Materials Storage and Transport Hazard

The hazardous material hazards are countywide and are primarily associated with the transport of materials via highway or rail.

Hazard Extent for Hazardous Materials Storage and Transport 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.

Calculated Risk Priority Index for Hazardous Materials Storage and Transport Hazard

The possibility of a hazardous materials accident is highly likely, based on input from the planning team. According to the RPI, Hazardous Materials Storage and Transport ranked as the number third greatest hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	4	=	**16**

Vulnerability Analysis for Hazardous Materials Storage and Transport Hazard

Hazardous material impacts are evenly distributed across the jurisdiction; therefore the entire county is vulnerable to a release associated with hazardous materials storage or transport and can expect the same impacts within the affected area. The building exposure for Jefferson County, as determined from building inventory, is included in Table 4-8. This plan will therefore consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility, if vulnerable, will encounter many of the same impacts as other buildings 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 will no longer be able to serve the community). Table 4-7 lists the types and numbers of all essential facilities in the area. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Building Inventory

Table 4-8 lists the building exposure in terms of type and number 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 due to fire or explosion or debris and loss of function of the building (e.g. a damaged home will no longer be habitable causing residence to seek shelter).

Infrastructure

During a hazardous materials release, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since a full inventory of infrastructure is not available for this plan, it is important to emphasize that any number of these items could become damaged in the event of a hazardous material release. 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 fail or become impassable causing risk to traffic.

The U.S. EPA's ALOHA (Areal Locations of Hazardous Atmospheres) model was utilized to assess the area of impact for a Chlorine release at the intersection of State Road 15 and 34th Street in Mount Vernon.

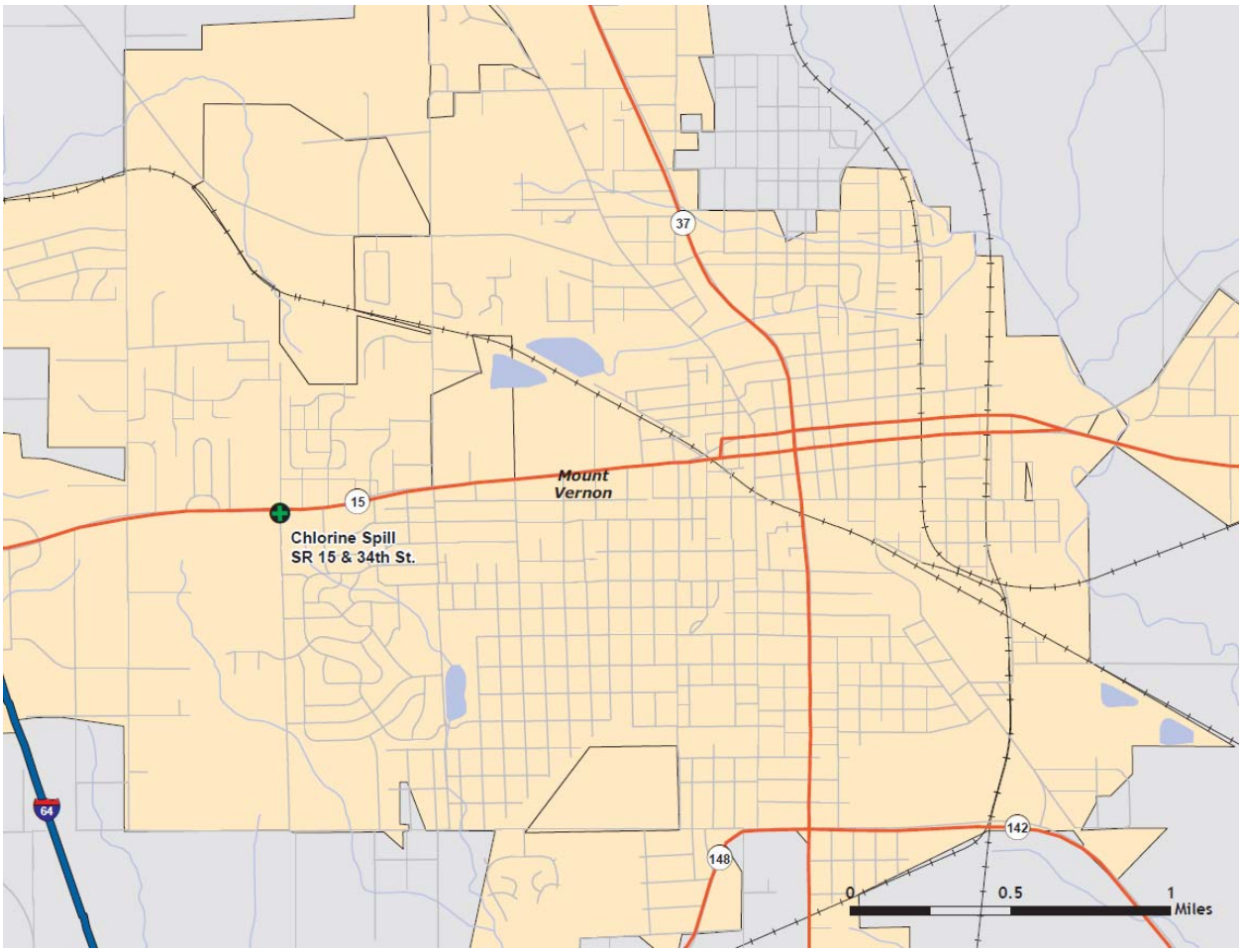
Chlorine is a greenish yellow gas with a pungent suffocating odor. The gas liquefies at -35°C and room pressure or will liquefy from pressure applied at room temperature. Contact with unconfined liquid chlorine can cause frostbite from evaporative cooling. Chlorine does not burn, but, like oxygen, supports combustion. The toxic gas can have adverse health effects from either long-term inhalation of low concentrations of vapors or short-term inhalation of high concentrations. Chlorine vapors are much heavier than air and tend to settle in low areas. Chlorine is commonly used to purify water, bleach wood pulp, and make other chemicals.

Source: CAMEO

ALOHA is a computer program designed especially for use by people responding to chemical accidents, as well as for emergency planning and training. Chlorine is a common chemical used in industrial operations and can be found in either liquid or gas form. Rail and truck tankers commonly haul Chlorine to and from facilities.

For this scenario, moderate atmospheric and climatic conditions with a slight breeze from the west were assumed. The target area was chosen due to the higher traffic of state roads in Mount Vernon. The geographic area covered in this analysis is depicted in Figure 4-14.

Figure 4-14: Location of Chemical Release



Analysis

The ALOHA atmospheric modeling parameters, depicted in Figure 4-15, were based upon a westerly wind speed of five mph. The temperature was 68°F with 75% humidity and partly cloudy skies.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to eight feet and the length set to 20 feet (7,500 gallons). At the time of its release, we estimated that the tank was 100% full. The Chlorine 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.

Figure 4-15: ALOHA Plume Modeling Parameters

```
SITE DATA:
  Location: MOUNT VERNON, ILLINOIS
  Building Air Exchanges Per Hour: 0.21 (sheltered single storied)
  Time: November 21, 2008  1743 hours CST (using computer's clock)

CHEMICAL DATA:
  Chemical Name: CHLORINE                Molecular Weight: 70.91 g/mol
  AEGL-1(60 min): 0.5 ppm   AEGL-2(60 min): 2 ppm   AEGL-3(60 min): 20 ppm
  IDLH: 10 ppm
  Carcinogenic risk - see CAMEO
  Ambient Boiling Point: -29.9° 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: 5 miles/hour from w at 10 meters
  Ground Roughness: open country         Cloud Cover: 5 tenths
  Air Temperature: 68° F                 Stability Class: F
  No Inversion Height                    Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Non-flammable chemical is escaping from tank
  Tank Diameter: 8 feet                  Tank Length: 19.9 feet
  Tank Volume: 7500 gallons
  Tank contains liquid                   Internal Temperature: 68° F
  Chemical Mass in Tank: 44.1 tons       Tank is 100% full
  Circular Opening Diameter: 2.5 inches
  Opening is 1 feet from tank bottom
  Release Duration: 14 minutes
  Max Average Sustained Release Rate: 10,400 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 83,496 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Acute Exposure Guideline Levels (AEGLs) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures.

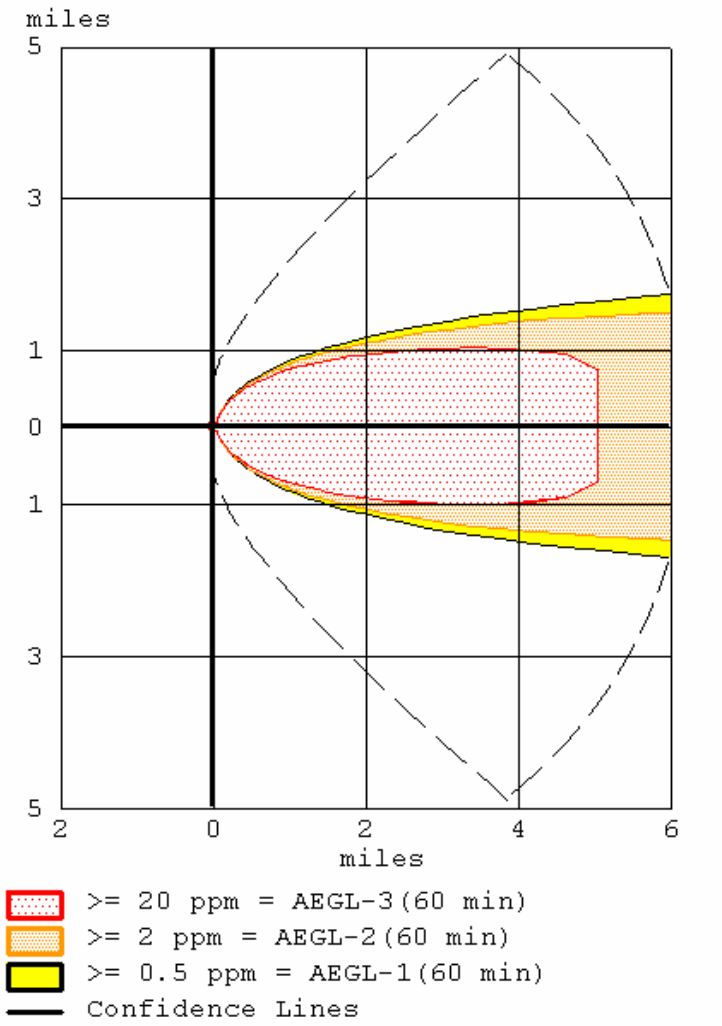
- AEGL 1: Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

- AEGL 2: Above this airborne concentration of a substance, 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: Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

According to the ALOHA parameters, approximately 10,400 pounds of material would be released per minute. The image in Figure 4-16 depicts the plume footprint generated by ALOHA.

Figure 4-16: Plume Footprint Generated by ALOHA

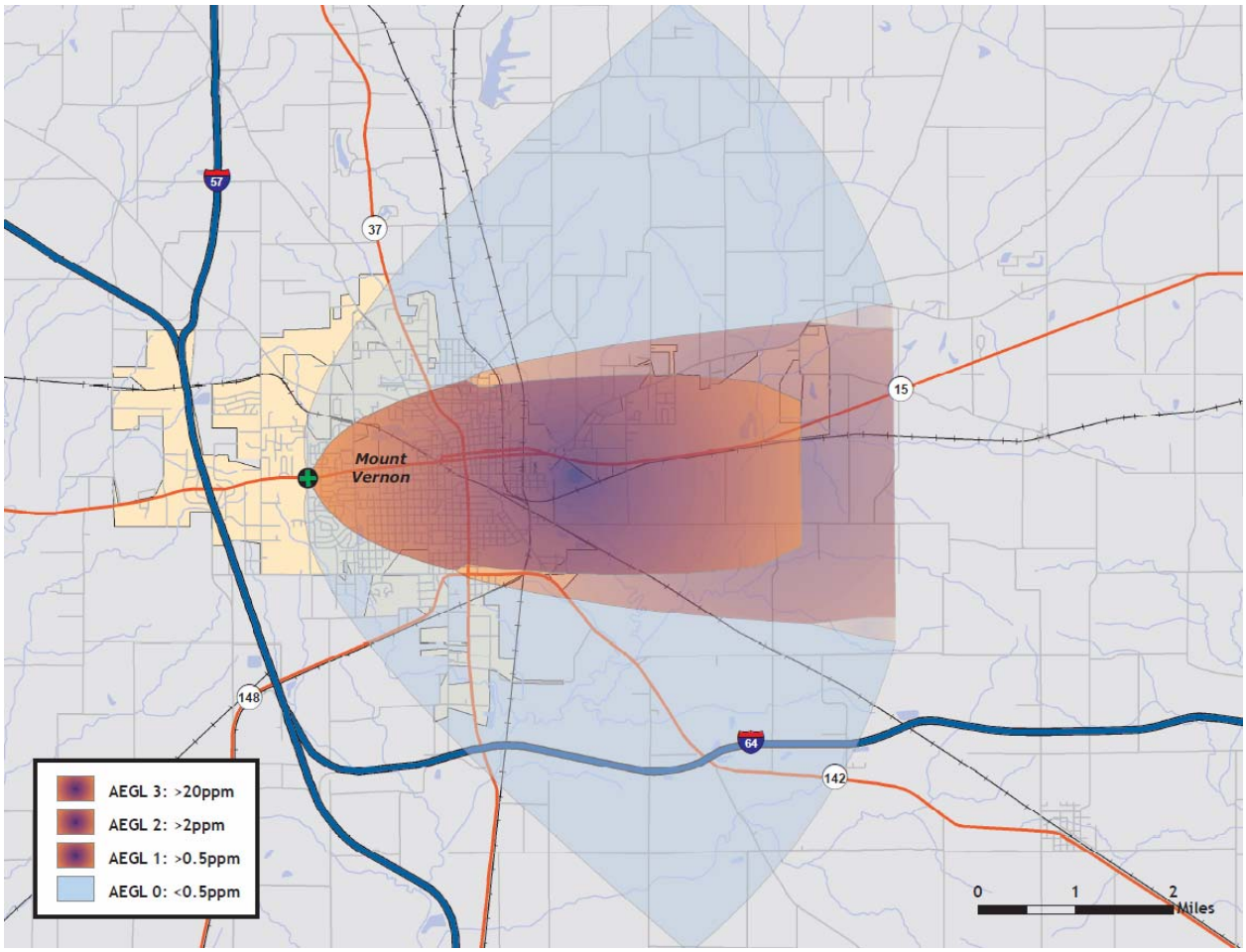


As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm). For the purpose of clarification, this report will designate each level of concentration as a specific zone. The zones are as follows:

- **Zone 1** (AEGL-3): The red buffer (>=20 ppm) extends no more than 4.8 miles from the point of release after one hour.
- **Zone 2** (AEGL-2): The orange buffer (>=2 ppm) extends no more than six miles from the point of release after one hour.
- **Zone 3** (AEGL-1): The yellow buffer (>=0.5 ppm) extends more than six miles from the point of release after one hour.

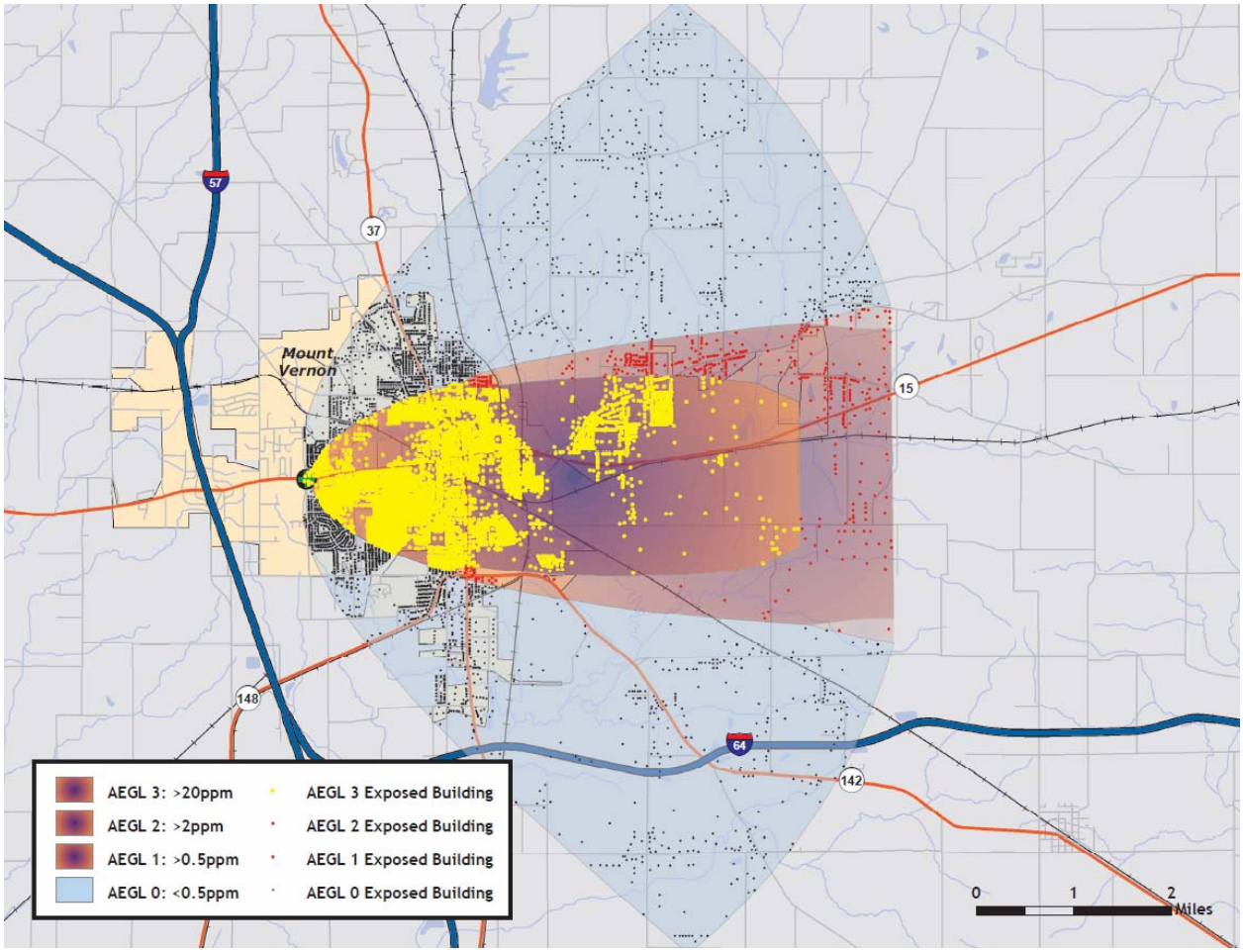
- **Zone 4** (Confidence Lines): The dashed lines depict the level of confidence in which the exposure zones will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

Figure 4-17: ALOHA Plume Footprint Overlaid in ArcGIS



The Jefferson County Building Inventory was added to ArcMap and overlaid with the plume footprint. The Building Inventory was then intersected with each of the four footprint areas to classify each point based upon the plume footprint in which it is located. Figure 4-18 depicts the Jefferson County Building Inventory after the intersect process.

Figure 4-18: Jefferson County Building Inventory Classified By Plume Footprint



Results

By summing the building inventory within all AEGL zones (Zone 1: > 20 ppm, Zone 2: > 2 ppm, Zone 3: > 0.5 ppm, and Zone 4: < 0.5 ppm), the GIS overlay analysis predicts that as many as 8,236 buildings could be exposed at an assessed value of $542.6 million. If this event were to occur, approximately 15,855 people would be affected.

Building Inventory Damage

The results of the analysis against the Building Inventory points are depicted in Tables 4-34 through 4-38. Table 4-34 summarizes the results of the chemical spill by combining all AEGL zones.

Table 4-34: Estimated Exposure for all Zones (all ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	15,855	6,342	$337,363,740
Commercial	0	837	$131,470,515
Industrial	0	47	$43,474,293
Agriculture	0	429	$30,336,399
Exempt	0	581	$0
Total	**15,855**	**8,236**	**$542,644,947**

Tables 4-35 through 4-37 summarize the results of the chemical spill for each zone separately.

Table 4-35: Estimated Exposure for Zone 1 (> 20 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	9,633	3,853	$151,772,763
Commercial	0	655	$103,379,448
Industrial	0	27	$5,458,575
Agriculture	0	29	$1,490,562
Exempt	0	435	$0
Total	**9,633**	**4,999**	**$262,101,348**

Table 4-36: Estimated Exposure for Zone 2 (> 2 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	758	303	$23,532,117
Commercial	0	28	$6,207,237
Industrial	0	1	$16,346,088
Agriculture	0	69	$4,037,862
Exempt	0	24	$0
Total	**758**	**425**	**$50,123,304**

Table 4-37: Estimated Exposure for Zone 3 (> 0.5 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	25	10	$654,078
Commercial	0	0	$0
Industrial	0	0	$0
Agriculture	0	8	$514,356
Exempt	0	0	$0
Total	**25**	**18**	**$1,168,434**

Zone 4 depicts the level of confidence in which the exposure zones will be contained. The ALOHA model is 95% confident that the release will stay within this boundary. Table 4-38 summarizes the results of the chemical spill for Zone 4.

Table 4-38: Estimated Exposure for Zone 4 (< 0.5 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	5,440	2,176	$161,404,782
Commercial	0	154	$21,883,830
Industrial	0	19	$21,669,630
Agriculture	0	323	$24,293,619
Exempt	0	122	$0
Total	**5,440**	**2,794**	**$229,251,861**

Essential Facilities Damage

There are 32 essential facilities within the limits of the chemical spill plume. The affected facilities are identified in Table 4-39. Their geographic locations are depicted in Figures 4-19 and 4-20.

Table 4-39: Essential Facilities within Plume Footprint

Name
St Mary's Good Samaritan
Good Samaritan Reg Health Center
Crossroads Community Hospital
White Oak Health Care
Countryside Manor
Residential Living Center
Mt. Vernon Care Center
Mt.Vernon Civil Emergency Svc
Jefferson County Justice Center
Jefferson Fire Protection District
Mt. Vernon City Fire Department (Main St.)
Mt. Vernon City Fire Department (Logan Ave.)
Mt. Vernon City Fire Department (Airport Rd.)
Jefferson County Sheriff
Mt. Vernon Police Department
Jefferson County Emergency Telephone
St. Mary Elementary School
Mt. Vernon Christian School
Victory Christian Academy
Mt. Vernon High School
UMCH Alternate School
Mt. Vernon Alternative School (Broadway St.)

Name
Mt. Vernon Alternative School
Bethel Grade School
Dodds Elementary School
Zadock Casey Middle School
Dr. Andy Hall Elem School
Benjamin Franklin Early Development
Horace Mann Elementary School
Head Start Kenneth Martin Center
Primary Center
Summersville Grade School

Figure 4-19: Essential Facilities within Plume Footprint

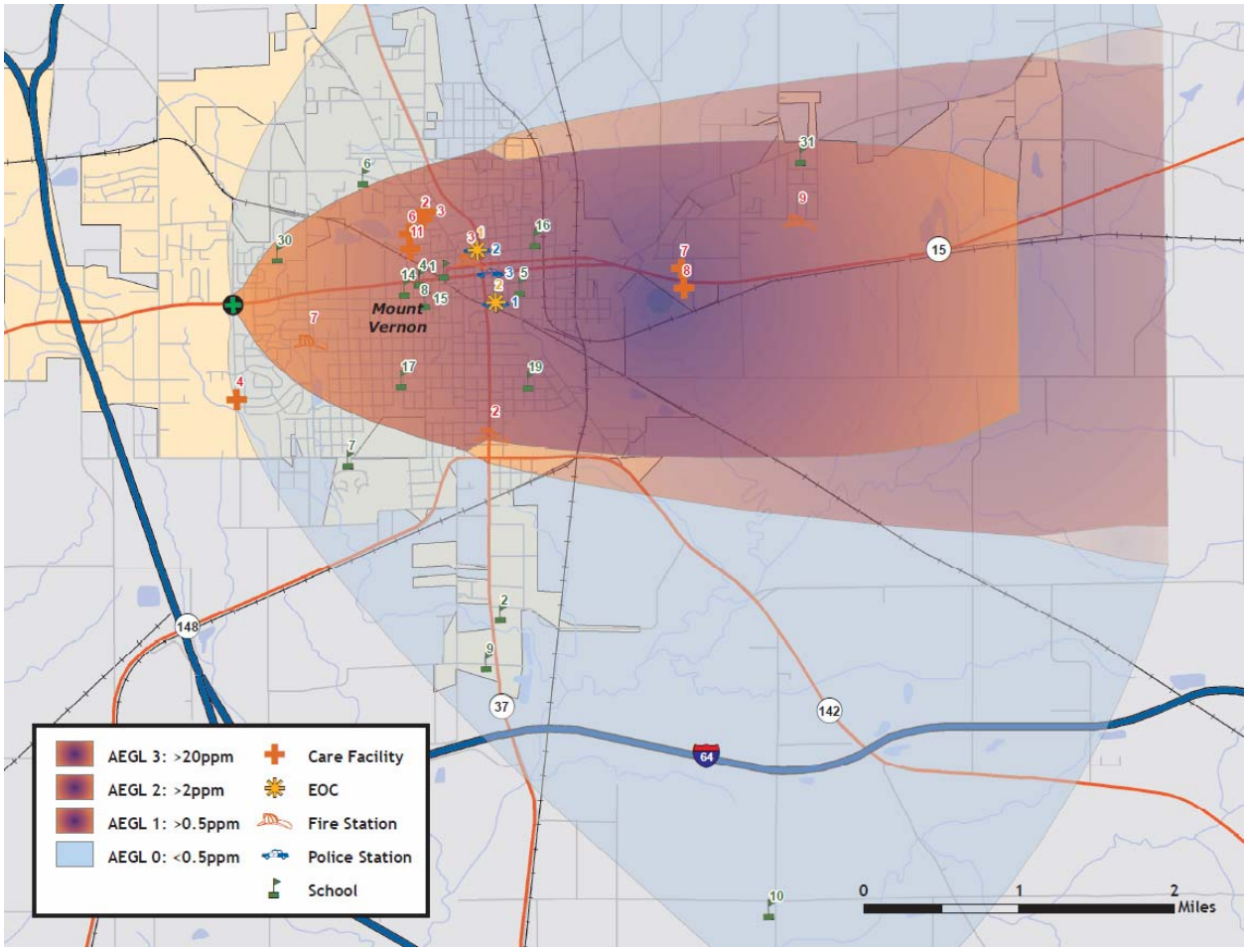
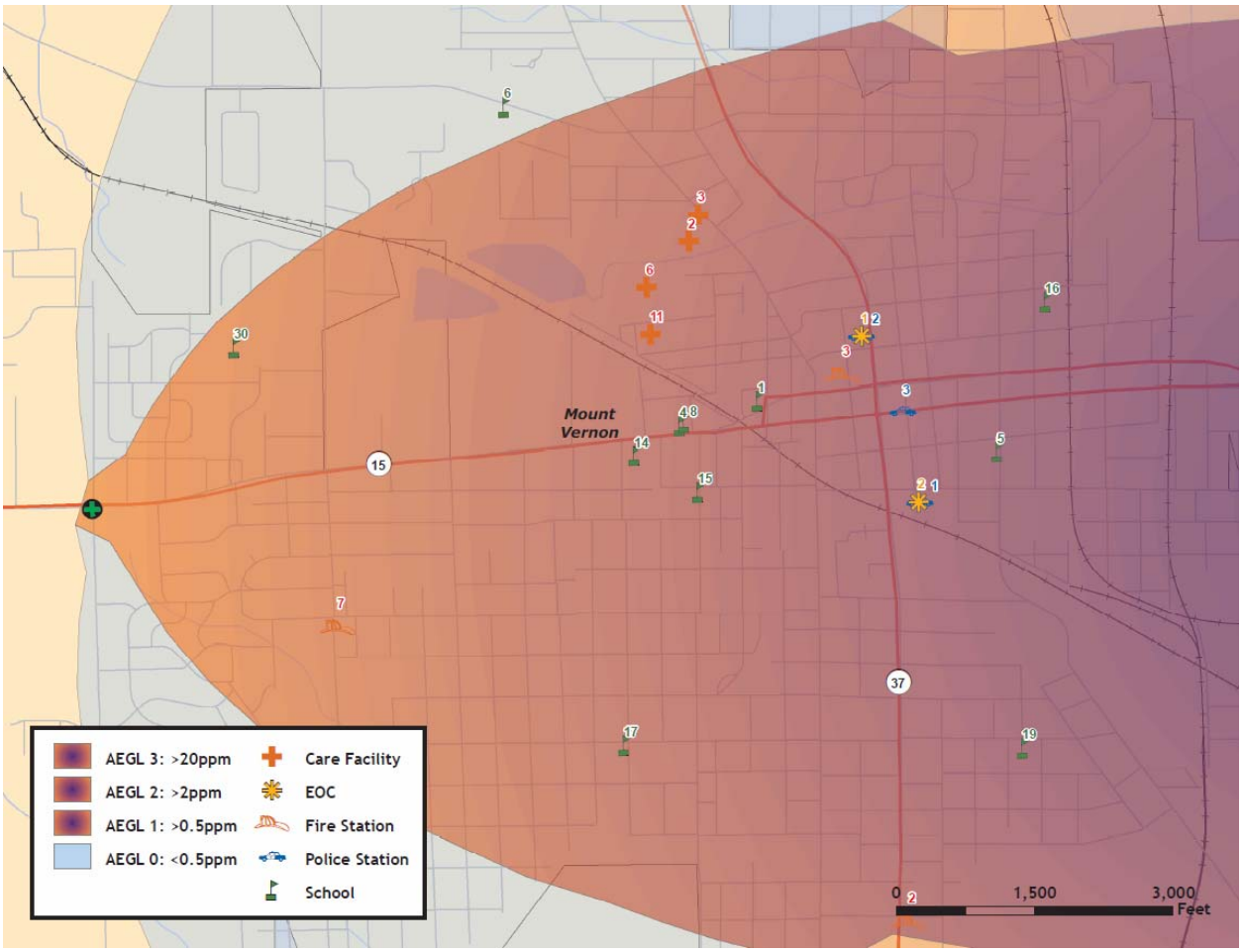


Figure 4-20: Essential Facilities at Greatest Risk



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

Much new development in Jefferson County is in close proximity to transportation corridors, such as along State Roads 15 and 37. These areas are particularly vulnerable to chemical releases because of transportation of hazardous materials.

Analysis of Community Development Trends

Because of the concentration of new development in proximity to the transportation network, future development is likely to be vulnerable. The major transportation routes and the industries located in Jefferson County pose a threat of dangerous chemicals and hazardous materials release.

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Section 5 - Mitigation Strategy

The goal of mitigation is to reduce a hazard's future impacts including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. The goal of mitigation is to build disaster-resistant communities. Mitigation actions and projects should be based on a well-constructed risk assessment; Jefferson County's is provided in Section 4 of this plan. Mitigation should be an ongoing process that adapts over time to accommodate the community's needs.

5.1 Community Capability Assessment

The capability assessment identifies current activities used to mitigate hazards. The capability assessment identifies the policies, regulations, procedures, programs, and projects that contribute to the lessening of disaster damages. The assessment also provides an evaluation of these capabilities to determine whether the activities can be improved in order to more effectively reduce the impact of future hazards. The following sections identify existing plans and mitigation capabilities within all of the communities listed in Section 2 of this plan.

5.1.1 National Flood Insurance Program (NFIP)

The county and the communities of Bluford, Bonnie, Ina, and Mt. Vernon are members of the NFIP. HAZUS-MH estimated that approximately 39 households were located in the Jefferson County Special Flood Hazard Area; as of June 18, 2007, the Federal Emergency Management Agency NFIP Insurance Report for Illinois stated that 43 households paid flood insurance, insuring $3,373,100 in property value. The total premiums collected amounted to $17,563, which on average was $408 annually. From 1978 to 2007, eight claims were filed totaling $80,837. The average claim was $10,105.

The county and incorporated areas do not participate in the National Flood Insurance Program's (NFIP) 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 meeting the three goals of the CRS: 1) reduce flood losses; 2) facilitate accurate insurance rating; and 3) promote the awareness of flood insurance.

Table 5-1 identifies each community and the date each participant joined the NFIP.

Table 5-1: Additional Information on Communities Participating in the NFIP

Community	Participation Date	FIRM Date	CRS Date	CRS Rating	Flood Plain Zoning Ordinance Adopted Last
Jefferson County	10/31/2000	3/4/1977	N/A	N/A	8/16/2000
Village of Bluford	N/A	7/22/1977	N/A	N/A	N/A
Village of Bonnie	8/19/1985	8/19/1985	N/A	N/A	8/19/1985
Village of Ina	5/25/1984	7/1/2007	N/A	N/A	5/25/1984
City of Mt. Vernon	2/15/1984	2/15/1984	N/A	N/A	1966

NSFHA - Non-Special Flood Hazard Area

In Jefferson County only three out of the nine incorporated communities participate in the NFIP. Four incorporated communities (Villages of Belle River, Dix, Nason, and Woodlawn) have no identified flood hazard boundaries; therefore, the communities do not participate in the NFIP. The villages of Bluford and Waltonville do have identified flood boundaries but have previously chosen not to participate in the program. The County will continue to educate these jurisdictions on the benefits of the program.

5.1.2 Stormwater Management Stream Maintenance Ordinance

Jefferson County has a stormwater management plan as an element of the Subdivision Ordinance, Sections 34-1-4. Every residential subdivision is provided with facilities which can satisfactorily accommodate the run-off incident to the 10-year design storm. The drainage facilities in any commercial or industrial subdivision must be designed to handle the run-off of the 25-year design storm.

The village of Dix has a stormwater management plan as an element of the Subdivision Ordinance, Sections 3, 4, and 5. Any persons proposing to subdivide land must file a preliminary sketch plan of the proposed plat with the Planning Commission for consideration by public hearing. The preliminary plat must show the locations and sizes of sanitary and storm sewers, water mains, culverts, and underground structures in or near the property. Other conditions apply to this preliminary review process, which have been omitted. All 24-foot-wide pavements will be provided with shoulders six feet wide with a slope of ½ inch per foot and drainage ditches where appropriate with slopes of three feet horizontal for each foot vertical and at least one foot in depth. Wherever any stream or important surface drainage course is located within an area being subdivided, the subdivider must provide an adequate easement along each side of the stream for widening, deepening, sloping, improving or protecting the stream.

The village of Ina has a stormwater management plan as an element of the Subdivision Ordinance, Sections 34-1-4. Every residential subdivision must be provided with facilities which can satisfactorily accommodate the run-off incident to the 10-year design storm. The drainage facilities in any commercial or industrial subdivision must be designed to handle the run-off of the 25-year design storm.

The city of Mt. Vernon has a stormwater management plan as an element of the Subdivision Ordinance, Sub-Sections 5. The subdivider must provide adequate surface and subsurface drainageways, to the extent of which is required. An analysis based upon calculations, prepared by a registered professional engineer, will determine the design requirements. The analysis will be based upon the rational method of computing storm run-off, using the one-hour rainfall to be expected at a five-year frequency. Other variable and factors to be used in the analysis will be discussed with and approved by the City Engineer. A storm water sewer system, which must be separate and independent of the sanitary sewer system with surface inlets, will be provided by the subdivider in all cases. Any person proposing to locate a structure or a use within 100 feet of any stream or main drainage channel in any zoning district must include with the application for a Building or Use Permit, a statement by an engineer, based on a study of the watershed area and the probable run-off, that the structure or use in the location proposed will leave space for the

flow of flood waters. No building is permitted within 50 feet of the top of the bank of any stream or main drainage channel.

5.1.3 Zoning Management Ordinance

Table 5-2 identifies the dates each city and village that has adopted land use planning and zoning ordinances within the county. The city of Mt. Vernon and the village of Belle Rive each has a zoning administrator.

Table 5-2: Description of Zoning Plans/Ordinances

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord.	Seismic Ord.	Bldg. Stndrds.
Jefferson County	5/1970	N/A	9/14/1982	N/A	9/14/1982	N/A	N/A	N/A
Village of Belle Rive	N/A	4/20/1970	N/A	N/A	N/A	N/A	N/A	N/A
Village of Bluford	N/A	N/A	N/A	N/A	N/A	5/2/1989	N/A	5/2/1989
Village of Bonnie	N/A	11/1999	N/A	N/A	N/A	N/A	N/A	N/A
Village of Dix (Rome)	5/20/1969	N/A	5/16/1974	N/A	5/16/1974	N/A	N/A	N/A
Village of Ina	N/A	1965	N/A	N/A	N/A	N/A	N/A	1965
City of Mt. Vernon	9/1963	1966	1966	1966	1966	1966	N/A	4/2007
City of Nason	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Waltonville	5/1969	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Woodlawn	6/2002	N/A	5/4/2004	N/A	N/A	4/6/1999	N/A	N/A

5.1.4 Erosion Management Program/ Policy

Jefferson County utilizes the Illinois Administrative Code Title 35 and the Illinois Environmental Protection Act, administered by the Illinois Environmental Protection Agency. This requires the submission of a stormwater pollution prevention plan (SWPPP) for projects involving more than one acre of land disturbance.

Short-term erosion control is described as follows: Grading will be phased so that the amount of exposed area at any one time is minimized. Graded areas will be stabilized immediately upon grading and maintained to prevent or minimize erosion until permanent stabilization measures are in place. Slope changes should be designed to keep the slope length and gradient to a minimum. Measures must be taken to direct stormwater from graded portions of the site. Sediment will be retained, to maximum degree possible, on site by filtering runoff and/or by providing properly designed siltation basins. Truck and equipment accessways to the site of the subdivision or other land development must be located so as to minimize danger to traffic and nuisance to surrounding properties. Such access will be kept wet or oiled or treated with a

chemical dust deterrent, or paved to the extent necessary to prevent any dust nuisance to surrounding developed properties. Public streets and sidewalks should be maintained free of soil and debris.

Long term erosion control is described as follows: All excavation, grading, or filling must have a finished grade not to exceed three to one, except that embankments less than three feet in height will be exempt if properly sodded. Steeper grades are allowed if the excavation is through rock or the excavation or fill is protected by a properly designed revetment or retaining wall approved by the Zoning Administrator. Such walls may not normally exceed a height of four feet, unless approved by the City Engineer. The Grading and Excavation Plan will provide for sediment basins, silt barriers, diversions, grass waterways, mulching, seeding, and other acceptable erosion control techniques. For site in excess of two acres, the finished grade of the site must direct surface water to diversion swales or inlets, which in turn will lower the water to a stable outlet constructed of concrete, riprap, or pipe. Land adjoining the proposed land development or subdivision will be provided with protection from accelerated and increased surface water, silt disposition and any other consequences of erosion. Lots will be laid out so as to provide positive drainage away from all buildings. Individual lot drainage will be coordinated with the general storm drainage pattern for the area. Drainage should be designed so as to substantially prevent stormwater drainage from each lot onto adjacent lots.

The city of Mt. Vernon has an erosion control management policy as an element of the Storm Drainage and Sediment Control Ordinance, Section 20-15 U. Erosion control plans must be submitted as part of the construction plans and specifications and include a complete copy of the Storm Water Pollution Prevention Control Plan, temporary erosion control measures, a permanent erosion control plan, details concerning of temporary erosion control devices, and maintenance procedures.

5.1.5 Fire Insurance Rating Programs/ Policy

Table 5-3 lists the fire departments in Jefferson County, as well as the ISO rating and the number of members in each department.

Table 5-3: Listing of Fire Departments, Ratings, and Number of Firefighters

Fire Department	Fire Insurance Rating	Number of Firefighters
Belle Rive Fire Dept.	ISO 10	9
Jefferson Fire Protection District – Station 1	ISO 6/9	36
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	15

5.1.6 Land Use Plan

Table 5-2 identifies the area Comprehensive Plans within Jefferson County.

5.1.7 Building Codes

Table 5-2 identifies the building standards adopted within the county. Mt. Vernon has adopted the International Building Code. Bluford has adopted the National Building Code. Many of the building codes for manufactured homes require tie-downs to minimize wind effects. There are no building codes specific to seismic control.

5.2 Mitigation goals

The Jefferson County Emergency Management Agency, Southern Illinois University-Carbondale Geology Department, the Polis Group of IUPUI, and the Greater Egypt Regional Planning & Development Commission assisted the Jefferson County Multi-Hazard Mitigation Planning Team in the formulation of mitigation strategies and projects for Jefferson County. The goals and objectives set forth were derived through participation and discussion of the views and concerns of the Jefferson County Multi-Hazard Mitigation Team members and related public input. The MHMP will focus on these goals, with a great deal of public input, to ensure that the priorities of the communities are represented.

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 which will assist the communities to attain the listed goals. Table 5-5 lists mitigation actions, which are defined projects that will help to complete the defined goals and objectives.

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

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

(b) Objective: Equip public facilities and communities to guard against damage caused by hazards.

(c) Objective: Minimize the amount of infrastructure exposed to hazards.

(d) Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.

(e) Objective: Improve emergency sheltering in Jefferson County.

Goal 2: Create new or revise existing plans/maps related to hazards affecting Jefferson County

(a) Objective: Support compliance with the NFIP for each jurisdiction in Jefferson County.

(b) Objective: Review and update existing community plans and ordinances to support hazard mitigation.

(c) Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

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

(a) Objective: Raise public awareness on hazard mitigation.

(b) Objective: Improve education of emergency personnel and public officials.

5.3 Mitigation Actions/Projects

Upon completion of the risk assessment and development of the goals and objectives, the Planning Committee was provided with a list of the six mitigation measure categories from the *FEMA State and Local Mitigation Planning How to Guides*. The measures are listed as follows.

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and

erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.

- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting #3, held December 18, 2008, MHMP members were presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The MHMP members brought their mitigation ideas to Meeting #4, which was held January 23, 2009. The evaluation criteria (STAPLE+E) involved the following categories and questions.

Social:
- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:
- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:
- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:
- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:
- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolution in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?

- Does the mitigation strategy address continued compliance with the NFIP?

Economic:

- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental:

- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

The development of the MHMP is the first step in a multi-step process to implement projects and policies to mitigate hazards in the county and its communities.

5.3.1 Completed or Current Mitigation Actions/Projects

Since this is the first mitigation plan developed for Jefferson County, there are no deleted or deferred mitigation items. Table 5-4 presents the completed and ongoing mitigation actions and projects in the county.

Table 5-4: Completed/Ongoing Mitigation Actions

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Comments
Link fire departments to MABAS and mobile command	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All	Mount Vernon	The City of Mount Vernon and IDOT oversaw this project. It was in place as of February, 2009.
Establish a Southern Illinois Response Team	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Improve education of emergency personnel and public officials	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County EMA, Mt. Vernon Fire Department, and the Jefferson County Sheriffs Department oversaw this project. It was in place as of February, 2009.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Comments
Establish a Mobile Verizon Emergency Response Communication Center	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County 911 and the Jefferson County Sheriffs Department oversaw this project. It was in place as of February, 2009.
Establish a GIS database of emergency responders	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County Assessor's Office oversaw this project. It was complete as of February, 2009.
Establish a system to send mass text messages to Rend Lake Community College students	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	All	Ina	The Rend Lake Community College oversaw this project. It was in place as of February, 2009.
Purchase EMA and First Responder equipment and conduct training	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Improve education of emergency personnel and public officials	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County EMA and Mt. Vernon Fire Department oversaw this project. It was on going as of February, 2009.
Develop an ITEX trailer for the mobile EOC	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	Tornado, Thunderstorm	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County Sheriffs Department and Jefferson County EMA oversaw this project. It was in place as of February, 2009.
Ensure that new construction meets IBC Codes	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Minimize the amount of infrastructure exposed to hazards	Tornado, Thunderstorm, Flood, Earthquake, Ground Failure	Mount Vernon	The City of Mount Vernon oversaw this project. It was in place as of February, 2009.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Comments
Raise Walton Road	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Minimize the amount of infrastructure exposed to hazards	Flood	Jefferson County	The Jefferson County Engineer oversaw this project. It was complete as of February, 2009.
Constructed new bridges to meet revised earthquake/seismic DOT standards	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing	Earthquake	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The IDOT oversaw these projects. The project was currently ongoing as of February, 2009.
Conduct Illinois earthquake drills and training	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	Earthquake	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	The Jefferson County EMA and IEMA oversaw this project. It on going as of February, 2009.
Stockpile building materials, such as rock and piping, for building temporary bridges	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Equip public facilities and communities to guard against damage caused by hazards	Earthquake	Mount Vernon	IDOT oversaw this project. Material was stockpiled as of February 2009.
Trim trees for utility companies	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Minimize the amount of infrastructure exposed to hazards	Winter Storm	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	AMREN and Local Power Cooperatives oversaw this project. The utility working with the communities have a tree trimming program.

5.4 Implementation Strategy and Analysis of Mitigation Projects

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide based upon many factors, which action will be undertaken initially. In order to pursue the top priority first, an analysis and prioritization of the actions is important. Some actions may occur before the top priority due to financial, engineering, environmental, permission, and/or 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.

In Meeting #4, the planning team prioritized mitigation actions based on a number of factors. A rating of High, Medium, or Low was assessed for each mitigation item and is listed next to each item in Table 5-6. The factors were the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria listed in Table 5-5.

Table 5-5: STAPLE+E planning factors

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

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from High to Low. An official cost benefit review will be conducted prior to the implementation of any mitigation actions. Table 5-6 presents mitigation projects developed by the planning team.

Table 5-6: Mitigation Strategies

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Develop public outreach programs to instruct public on what to do during potential hazards	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	High	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.
Organize a volunteer disaster response corps	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	High	The County EMA, schools, Red Cross, and other organizations will participate in this project. Local resources will used to target and inform the resident population. Additional funding will be sought from the Pre-Disaster Mitigation program.
Construct a new Emergency Operations Center	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objection:** Equip public facilities and communities to guard against damage caused by hazards	All	Jefferson County	High	The Jefferson County EMA will oversee the implementation of this project. Funding has not been secured as of 2009, but 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.
Harden existing community shelters	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Improve emergency sheltering in Jefferson County	Tornado, Thunderstorm, Flood, Winter Storm	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	High	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 2009. Implementation is forecasted to be initiated within approximately one year.
Purchase back-up generators for critical facilities	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Equip public facilities and communities to guard against damage caused by hazards	Tornado, Thunderstorm, Flood, Earthquake, Winter Storm, Ground Failure	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	High	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.
Install new emergency radio system (Star COM radios) that is interoperable with different emergency agencies	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	The County EMA will oversee the implementation of this project. Local resources will be used to evaluate the cost benefits of the radios. Funding has not been secured as of 2009. If funding is available, is forecasted to be complete within approximately three years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Conduct response and communication disaster training for EMAs and deputies	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Improve education of emergency personnel and public officials	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	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.
Develop an ordinance restricting development on undermined land areas	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Review and update existing community plans and ordinances to support hazard mitigation	Ground Failure	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	The Jefferson County EMA will oversee the implementation of this project. Local resources will be used to review the current ordinances. Funding has not been secured. Implementation is forecasted to be complete within approximately three years.
Purchase weather radios for schools and critical facilities	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All	Opdyke-Belle Rive, Bluford, Ina, Field Community, Mount Vernon, Waltonville, Woodlawn, School Districts	Medium	The County EMA will oversee the implementation of this project. Local resources will be used to evaluate the cost benefits of the radios. Funding has not been secured as of 2009. If funding is available, is forecasted to be complete within approximately three years.
Harden critical facilities	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objection:** Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing	Tornado, Thunderstorm, Flood, Earthquake, Ground Failure, Winter Storm	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	The Jefferson County EMA will oversee the implementation of this project. Funding has not been secured as of 2009, but 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 three years.
Retrofit existing bridges to withstand potential hazards	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Equip public facilities and communities to guard against damage caused by hazards	Tornado, Thunderstorm, Flood, Earthquake, Winter Storm	Jefferson County	Medium	The Jefferson County EMA and IDNR 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.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Improve drainage on IL Route 15 (near airport) and IL Route 148	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Minimize the amount of infrastructure exposed to hazards	Flood	Jefferson County, Mount Vernon, Waltonville	Medium	The Jefferson County EMA will oversee the implementation of this project. Local resources and additional grants will be used to procure the systems. If funding is available, is forecasted to be complete within approximately three years.
Amend zoning ordinances to improve floodplain regulations	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Support compliance with the NFIP for each jurisdiction in Jefferson County	Flood	Belle Rive, Bonnie, Ina, Mount Vernon, Waltonville, Woodlawn	Medium	The municipalities will oversee the implementation of this project. Local resources will be used to review the current ordinances. Funding has not been secured. Implementation is forecasted to be complete within approximately three years.
Implement stream maintenance to improve floodplain management	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Support compliance with the NFIP for each jurisdiction in Jefferson County	Flood	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	The County EMA and DNR will oversee the implementation of this project. Funding has not been secured as of 2009. Community development grants are a possible funding source. Implementation, if funding is available, is forecasted to be complete within approximately three years.
Purchase permanent signage or flood gates for flood-prone areas	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Minimize the amount of infrastructure exposed to hazards	Flood	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	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.
Implement a plan for voluntary buyouts for structures within Jefferson County	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Support compliance with the NFIP	Flood	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Medium	The County EMA will oversee the implementation of this project. Local resources will be used to evaluate the applicable areas. Table 4-19 presents potential buyout properties. 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.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Establish intercommunication between utility companies and emergency responders	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objection:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All	Jefferson County	Low	The Jefferson County EMA and local utility companies will oversee the implementation of this project. Funding has not been secured as of 2009, but 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 five years.
Designate and document watercraft for rescue and training	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objection:** Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	Flood	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Low	The Jefferson County EMA will oversee the implementation of this project. Funding has not been secured as of 2009, but local residents and organizations are a possible source. Implementation is forecasted to be initiated within approximately five years.
Conduct an engineering study for flooding in Jefferson County	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Conduct new studies/research to profile hazards and follow up with mitigation strategies	Flood	Jefferson County	Low	The County EMA and IDNR will oversee the implementation of this project. Local resources will be used to evaluate the severity of the study. Funding has not been secured, but additional funding will be sought from community development grants and IDNR. Implementation is forecasted to be initiated within approximately five years.
Compile a database of disaster responders (governmental and non-governmental organizations)	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Improve education of emergency personnel and public officials	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Low	The County EMA will oversee the implementation of this project. Local organizations will be used as resources and for possible funding. Implementation, if available, is forecasted to be complete within approximately five years.
Stockpile building materials, such as rock and piping, for building temporary bridges	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Equip public facilities and communities to guard against damage caused by hazards	Earthquake	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Nason, Waltonville, Woodlawn	Low	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.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Install automatic shutoff valves and retrofit buildings	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing	Earthquake	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Low	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 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.
Conduct a study of dam breaks at Miller Lake and Rend Lake	**Goal:** Create new or revise existing plans/maps related to hazards affecting Jefferson County **Objective:** Conduct new studies/research to profile hazards and follow up with mitigation strategies	Flood	Jefferson County	Low	The County EMA and IDNR will oversee the implementation of this project. Local resources will be used to evaluate the depth of the study. Funding has not been secured. Implementation, if funding is available, is forecasted to be complete within approximately five years.
Purchase emergency response equipment for clean up and removal, e.g. backhoe with clamp devise, bobcat skid steer	**Goal:** Lessen the impacts of hazards to new and existing infrastructure **Objective:** Equip public facilities and communities to guard against damage caused by hazards	Tornado, Thunderstorm, Flood, Winter Storm	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Low	The County EMA 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.
Develop a resource list to assist potential at-risk and/or special needs communities	**Goal:** Develop long-term strategies to educate the public on the hazards affecting Jefferson County **Objective:** Raise public awareness on hazard mitigation	All	Jefferson County, Belle Rive, Bluford, Bonnie, Dix, Ina, Mount Vernon, Nason, Waltonville, Woodlawn	Low	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.

The Jefferson County Emergency Management Agency will be the local champions for the mitigation actions. The county board and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions. Greater Egypt Regional Planning & Development Commission is qualified to provide technical grant writing services to assist the county in seeking resources to achieve the recommended mitigation action.

5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the 11 jurisdictions, 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 this plan. The county planning team used FEMA's evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.

Section 6 - Plan Maintenance

6.1 Monitoring, Evaluating, and Updating the Plan

Throughout the five-year planning cycle, the Jefferson County Emergency Management Director will reconvene the MHMP planning committee to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held during January 2014 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 arises, due to new developments or a declared disaster, the team will meet as necessary to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee 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 committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. 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 county commissioners.

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, this updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts. Many of the mitigation projects identified as part of this planning process are ongoing. If necessary, the County and its incorporated jurisdictions will update the planning documents, zoning plans, and ordinances listed in Tables 1-4 and 5-1 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by Jefferson County Emergency Management Director and forwarded to the MHMP planning committee for discussion. Education efforts for hazard mitigation will be ongoing through the local television stations, brochures, and yearly public meetings. Once adopted, a copy of this plan will be posted in the local public library and on the county website.

Glossary of Terms

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

B

BFE – Base Flood Elevation

C

CAMEO – Computer-Aided Management of Emergency Operations
CEMA – County Emergency Management Agency
CEMP – Comprehensive Emergency Management Plan
CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

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

E

EAP – Emergency Action Plan
ERPG – Emergency Response Planning Guidelines
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
FIS – Flood Information Study

G

GIS – Geographic Information System

H

HAZUS-MH – **Ha**zards **US**A **M**ulti-**H**azard
HUC – Hydrologic Unit Code

I

IDNR – Illinois Department of Natural Resources
IEMA – Illinois Emergency Management Agency

M

MHMP – Multi-Hazard Mitigation Plan

N

NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SPC – Storm Prediction Center
SWPPP – Stormwater Pollution Prevention Plan

U

USGS – United States Geological Survey

Appendix A – Minutes of the Multi-Hazard Mitigation Planning Team Meetings

JEFFERSON COUNTY BOARD
JEFFERSON COUNTY COURTHOUSE
100 S. TENTH STREET
MT. VERNON, ILLINOIS 62864
(618) 244-8000
FAX (618) 244-8111

August 15, 2008

Mr. Benton Fitzjerrells
Jefferson County Emergency
Management Agency
100 S. 10th St.
Mt. Vernon, IL 62864

Dear Mr. Fitzjerrells,

This letter certifies that the Jefferson County Board representative met previously with the Polis Group, SIU-C Geology Department and the Greater Egypt Regional Planning and Development Commission staff regarding the Pre Disaster Mitigation plan development and identified members of the Jefferson County Planning Team. The Planning Team membership may be expanded to include a wider range of stakeholders. It is understood that the Planning Team may add additional participants during the planning process.

The County Board certifies that the initial Planning Team and other participants added during the planning process is recognized as the Jefferson County Planning Team. The EMA Director, Benton Fitzjerrells, chairs the planning team and is assisted in facilitating the program by the Polis Group, Indianapolis, Indiana; SIU-C Geology Department; and the Greater Egypt Regional Planning and Development Commission.

Sincerely,

Ted Buck, Chairman
Jefferson County Board

TB/sat

IEMA Pre-Disaster Mitigation Plan

Planning Program Oversight Meeting:
County Board Chairmen, Emergency Management Agencies, Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Wednesday, March 19, 2008

Meeting Time: 1 hour 30 minutes

Place: SIUC Student Center, Kaskaskia Room

Attendance:

Dave Coats	POLIS
John Buechler	POLIS
Nicholas Pinter	SIUC Geology
Andy Flor	SIUC Geology
Harvey Henson	SIUC Geology
Ike Kirkikis	Greater Egypt Regional Planning & Development Commission
Robert Clodi	Greater Egypt Regional Planning & Development Commission
James Epplin	Perry County Board Chairman
John Evans	Jackson County Board Chairman
Brent Gentry	Williamson County Board Chairman
Randall Crocker	Franklin County Board Chairman
Ted Buck	Jefferson County Board Chairman
Alan Gower	Williamson County EMA
Dennis Litton	Jefferson County EMA
Michael Richmond	Perry County EMA
Derek Misener	Jackson County EMA.

The meeting is called to order

Dave Coats (associate director) **and John Buechler** (project manager) from IUPUI, Polis Center explained the Pre-Disaster Mitigation Planning Project. It was explained that FEMA, based on federal legislation passed in 2000, required that all incorporated communities must have a Pre-Disaster Mitigation Plan in place to be eligible for FEMA mitigation funding. They also explained that a 25% match was needed to receive funding. John Buechler stated that the value of the GIS data and sweat equity that will be put into developing this plan would satisfy the match. He also expresses the importance of tracking and documenting the time spent on the project by each volunteer working on the project.

Dave Coats and John Buechler explained the process for developing the plan and that it will require a total of six meetings in each of the counties. They went into great detail about each of the meeting and the issues that would be addressed. They also estimated that the complete process of developing the plan would take about one year. Lastly, they introduced a website that the planning team will use to organize meeting, post documents, and to access minutes throughout the planning process.

Nicholas Pinter (SIUC Geology) introduced the SIUC team and explained the role they will play in planning process. SIUC will be providing all the technical mapping throughout the planning process.

Ike Kirkikis (Director, GERPDC) asked Andy Flor (SIUC Geology) about the agreement that will need to be made about the restricted use of the GIS data needed for the project. Andy Flor, Nicholas Pinter, Dave Coats, and John Buechler all confirmed that a Memorandum of Understanding would be created and sent to each county for review and acceptance. All the County Board Chairmen expressed their concerns with the discretion of the use of the GIS data.

Rob Clodi (Planner, GERPDC) asked how the planning team would be selected. Dave Coats responded and said that a list of affiliations is provided for ideal team member candidacy. He explained that the Emergency Management Agency is typically selected as the chair of the planning team. Lastly, he mentioned that the planning team must be officially recognized by the County Board. Nicholas Pinter added that as soon as a planning team is assembled the first meeting can be scheduled.

After a few questions that clarified the planning process, Dave Coats and John Buechler presented a Multi-Hazard Mitigation Planning of Posey County, Indiana for review.

Meeting was adjourned.

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 1:
Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPUI-Polis

Meeting Date: Friday, August 15, 2008

Meeting Time: 1 1/2 hours

Place: Municipal Building Mt. Vernon

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Nicholas Pinter	SIUC Geology
Robert Clodi	Greater Egypt Regional Planning & Development Commission
Ike Kirkikis	Greater Egypt Region Planning & Development Commission
Rich Dial	Ameren
Mark Stevens	Jefferson County Health Department
Kevin Sargent	City of Mt. Vernon Fire Department/Jefferson County Emergency Management Agency
Benton Fitzjerrells	Jefferson County EMA
Robert Hyman	St. Mary's Good Samaritan Hospital
Mary Ellen Bechtel	Jefferson County Development
Marty Schwartz	Jefferson County Sheriff's Office
Robert Beal	Jefferson Fire Protection District
Brian Beaty	Jefferson County Fire Protection District
Steve Schnake	Jefferson County Highway Department
Chris Mendenall	Mt. Vernon Police Department
Ted Buck	Jefferson County Board Chairman
Charlie Bruce	Crossroads Hospital
Bruce Barkau	Tri-County Electric
Alan Troutt	City of Mt. Vernon Public Utilities
Mike Shannon	City of Mt. Vernon
Steve Lueker	Jefferson County Assessor's Office

Introduction to the Pre-Disaster Mitigation Planning Process

The meeting is called to order

Narrative: A presentation of the Pre-Disaster Mitigation Planning Process was given by Nicholas Pinter.

Nicholas 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. A twenty-five percent match will be required from the county to fund this project. The county match will be met by sweat equity and GIS data acquired from County Assessor's Office. The sweat equity will be an accumulation of time spent at the meetings, on research assignments, surveys, along with time spent reviewing and producing the planning document.

Nicholas Pinter introduced the Pre-Disaster Mitigation Website to the planning team. A username and password was given to the planning team, which will grant them access to the web site. The website is used to schedule meetings, post contact information and download material pertaining to the planning process.

Nicholas Pinter divided the planning project into six meeting. At the 1st meeting, the planning team will review critical facility maps. The planning team will be asked to research and verify the location of all critical facilities within the county. Jonathan stated that public participation is very important throughout the planning process. He explained that all of the meetings are open to the public but there will be a particular effort made to invite the public to the 3rd meeting. At that meeting, the SIUC Geology Department will present historic accounts of natural disasters that have affected this area. At the 2nd meeting the discussion will focus on natural disasters that are relevant to this area. These hazards will be given a probability rating and ranked by their occurrence and potential level of risk. Polis and SIUC Geology will research these hazards and present them to the planning team. The 3rd meeting is publicized in order to encourage public participation. Polis and SIUC Geology will produce a risk assessment in draft form; each planning team member will get a copy. Also they will present strategies and projects that FEMA and other counties have undertaken for the planning team to review. The 4th meeting consists of a brain storming session focused on disasters that were analyzed in the risk assessment report. The Planning Team will list strategies and projects that could be implemented to mitigate the potential hazards that threaten the county. FEMA requires that for every identified hazard a strategy to mitigate the loss and damage must be in place. The strategies may range from educational awareness to hardening a building or building a levee. After the 4th meeting the plan will be in its final draft form. At the 5th meeting the planning team will need to review the plan prior to sending it to IEMA. IEMA will review the plan and will make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once the plan has been submitted to FEMA, local governments are eligible to apply for grants to mitigate these established hazards. After FEMA approves the plan, it is sent back to the Planning Team. At the 6th meeting the Planning Team will present the Pre-Disaster Mitigation Plan to the County Board for adoption. Incorporated communities must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA. The communities are encouraged to participate and contribute to development of the plan. Once the County Board has adopted the plan, each incorporated community will have the opportunity to adopt the plan as well.

Narrative: Nicholas Pinter introduces Jonathan Remo.

Jonathan Remo presented three maps that identified critical facilities in the county. He asked the planning team to review these maps to identify any corrections that need to be made to the

maps. He assigned research homework arranged by categories to individual planning team members to locate missing or incorrect critical facilities.

Narrative: A few clarifications where made about the planning process and the participation needed to complete the plan.

Meeting was adjourned

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 2:

Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency
Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Wednesday, October 10, 2008, at 9:00 am

Meeting Time: 1.5 hrs

Place: Jefferson County Court House

Planning Team/Attendance:

Roger Mulch	Jefferson County Sheriff's Office
Mark Stevens	Jefferson County Health Dept.
Kevin Sargent	Mt. Vernon EMA
Mike Shannon	City of Mt. Vernon
Bruce Barkau	Tri-County Electric
Benton Fitzjerrells	Jefferson County EMA
Steve Lueker	Jefferson County Assessor's Office
Nicholas Pinter	SIUC
Jonathan Remo	SIUC
Robert Clodi	Greater Egypt Regional Planning & Development Commission
Ike Kirkikis	Greater Egypt Regional Planning & Development Commission

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The meeting was called to order.

Nicholas Pinter began the meeting by re-introducing the objectives of the PDM Planning document. The planning document is mandated as a result of the "Disaster Mitigation Act of 2000." Jonathan stated that the objective of the meeting held today was to prioritize a list of disasters that are relevant to Jefferson County.

Ike Kirkikis stated the importance of achieving participation from each of the incorporated communities. He explained that the 3rd meeting is the most important to achieve this community participation and will involve general public as well. He presented the planning team with the first chapters of the plan for review, which was handed out at the end of the meeting. He also provided the planning team with in-kind forms to document the time each planning team member has spent researching critical facilities information. Lastly, he presented the PDM Planning website and described the contents of the site.

Nicholas Pinter provided the planning team with a handout to direct the focus of the meeting discussion. As Jonathan began to conduct the prioritizing process, he described the risk assessment ranking that FEMA has established.

Narrative: The Planning Team was then asked to assess a risk level to each disaster that was identified in Jefferson County. The risk level is ranked as followed:

Tornados	1
Thunderstorms/Wind	2
Hazmat	3
Earthquake	4
Pandemic Epidemic	5
Winter Storms	6
Flood	7

Narrative: The Planning Team was then asked to analyze the historical weather events that have been plotted on a map of the county and communities therein. Corrections were noted and are listed as follows:

A tornado occurred in 1985 and went through the northern portion of Ina.

A tornado occurred in January 2008 and skirted the north side of Dix.

A sever thunderstorm occurred on July 21, 2006 and followed State Route 15 east to west across the county.

The planning team agreed to complete in-kind forms and any missing information pertaining to critical facilities by the next meeting.

Meeting was adjourned.

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 3:

Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency
Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Thursday, December 18, 2008, at 9:00 am

Meeting Time: 1.5 hrs

Place: Municipal Building Mt. Vernon

Planning Team/Attendance:

Steve Damron	Jefferson County Board
Mary Ellen Bechtel	Jefferson County Development Corp.
Bill Shega	Woodlawn Village Board/Fire Protection Dist.
Joe Eckelberry	Woodlawn Village Board/Fire Protection Dist.
James Parkhill	Bluford Water, Sewer, and Gas
Stan Drennan	Jefferson County Hwy. Dept.
Benton Fitzjerrells	Jefferson County EMA
Mike Shannon	City of Mt. Vernon
Mary Jane Chesley	Mayor of Mt. Vernon
Nicholas Pinter	SIUC
Jonathan Remo	SIUC
Megan Carlson	SIUC
Robert Clodi	Greater Egypt Regional Planning & Development Commission

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The meeting was called to order.

Robert Clodi opened the meeting by thanking everyone for coming and asked if representatives of the planning team had any knowledge of the ISO rating in Villages of Waltonville and Woodlawn.

Narrative: Benton Fitzjerrells volunteered to track down the information on Waltonville and Woodlawn.

Robert Clodi introduced Nicholas Pinter and gave a brief overview of what the meeting would cover that day.

Nicholas Pinter began by introducing his colleagues Jonathan Remo and Megan Carlson. In his presentation, Nicholas reviewed Polis and SIU's role in the planning process. He offered Jonathan Remo and himself as points of contact throughout the planning process. Nicholas moved on to explain the topics and objectives of the current meeting that was being held. First

Nicholas presented the planning team with the list of hazards the team had ranked by their level of risk.

Narrative: A copy of Chapter Four, Risk Assessment, was given to each of the planning team members to review.

Nicholas covered each hazard in his presentation and produced historical accounts of each topic. He then transitioned to the focus of the meeting, mitigation strategies. He defined mitigation as the act of avoidance and preparedness.

Narrative: A copy of Mitigation Ideas, produced by FEMA Region 5 on July 2002, was given to each of the planning team members for review.

Nicholas explained that content of the booklet and asked that each of the planning team members return to meeting 4 with three mitigation strategies for each of the hazards identified by the planning team. He closed his presentation by thanking everyone for participating.

Meeting was adjourned.

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 4:

Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency
Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Friday, January 23, 2008, at 9:30 am

Meeting Time: 1.75 hrs

Place: Municipal Building Mt. Vernon

Planning Team/Attendance:

Roger Mulch	Jefferson County Sheriff's Office
Mark Stevens	Jefferson County Health Dept.
Kevin Sargent	Mt. Vernon EMA
Mike Shannon	City of Mt. Vernon
James Parkhill	Village of Bluford
Benton Fitzjerrells	Jefferson County EMA
Steve Lueker	Jefferson County Assessor's Office
Steve Schnake	Jefferson County Hwy Dept.
Stan Drennen	Jefferson County Hwy Dept.
Randy Tepovich	Waltonville Water Dept.
Ed Dulaney	Waltonville Fire Dept.
Chloe Dulaney	Waltonville Fire Dept.
Don Bigham	Baptist Disaster Relief
Joe Eckelberry	Village of Woodlawn
Charlie Bruce	Cross Roads Hopsital
Brad Peterson	Village of Waltonville
Alan Troutt	City of Mt. Vernon
Terry Jones	Jefferson County ESDA
Mary Ellen Bechtel	Jefferson County Development Corp.
John Buechler	Polis
Jonathan Remo	SIUC
Robert Clodi	Greater Egypt Regional Planning & Development Commission

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The meeting was called to order.

Robert Clodi thanked everyone for coming and distributed out in-kind forms to all the attending planning team members. He asked that each planning team member document the time sent reviewing the material on that form and return it to Greater Egypt Regional Planning Commission. Extra mitigation strategy handbooks were given to planning team members that were in need of one. Robert explained the today's meeting would cover mitigation strategies that

the planning team believed would prevent or eliminate the loss of life and property. He explained that the planning team should not make any reservations in the form of money or resources when developing this list. Also whenever possible, be specific about the location or focus area of a strategy, in respects to being within a municipality or county wide. Lastly, he introduced John Buechler from the Polis Center.

John Beuchler began by briefly explaining the reason and process of the Multi-Hazard Mitigation Planning Project. After the new members of the planning team were brought up to current with the planning process the focus of the meeting began. The planning team listed new and current mitigation strategies, and then prioritized them.

Listed below are the New Mitigation Strategies conceived by the planning team:

New Strategy	Hazard	Jurisdiction	Priority Votes
Harden Critical Facilities	Tornado, Earthquake	All	13
Emergency Operation Center	All	County	3
Generators for Critical Facilities	All	All	0
Improve Communication Capabilities	All	All	18
Improve Inoperable Communications between Agencies (Starcom)	All	All	0
Improve Public and Private Sector Communication (Ameren, Tri County Electric, etc.)	All	All	0
Encourage Under Ground Utility Line	Tornado, Winter Storms, Severe Thunder Storms, Hail, Wind	All	0
Study/List of Emergency Response Teams (Red Cross, Faith Base Organizations, etc.)	All	All	0
Improve EMA Training/Staff/Resources/Equipment	All	All	0
Weather Radios in Public Assembly Areas	All	All	0
New or Harden Emergency Operation Center (Possible New Location, Old Armory)	Tornado, Earthquake	County	1
Improve Shelter Capabilities	All	All	0
Acquire Emergency Response Equipment for Clean Up and Removal (Backhoe with clamp devise, Bobcat Skid Skies)	All	All	3
Resource List of High Risk Loss of Life Areas (Special Needs)	All	All	0
Establish a Volunteer Corp. for Emergency Response (Funding Red Cross)	All	All	5

Flood Prove Areas	Flood	East of Airport on 15th Street near Railroad (County), Route 148, N. 6th St. (Mt. Vernon)	0
Get Temporary Barricades and Signage for Flooded Areas	Flood	All	0
Zoning Ordinance Amendment	Flood	Mt. Vernon	0
Raise Structures or Relocate Flood Prone Structures	Flood	All	0
Improve Flood Plain Analysis in Rural Areas	Flood	County	0
JC Lake and Miller Lake Dam Study	Flood	County	0
Coordinated/Acquire Equipment for Rescue Team (Boat)	Flood	County	5
Stream Maintenance	Flood	All	0
Stormwater System Maintenance	Flood	All	0
Retro Fit Bridges	Earthquake	All	0
Stock Pile Supplies (Gravel, Rock, Steel)	Earthquake	County	0

Listed below are the Current Mitigation Strategies already being implemented throughout the County:

Current Strategy	Hazard	Jurisdiction
International Building Code	Earthquake, Tornado, Wind, Winter Storms	Mt. Vernon
I Tech Trailer	All	All
Mobile Verizon Emergency Response Communication Center	All	All
GIS Data Base (Comprehensive Phone List, Parcel, Critical Facilities Profiles, Etc.)	All	All
Rend Lake College Text Communication For Cell Phones	All	Rend Lake College
Regional Response Team (MAVUS)	All	All
Mobile Trailer/Team for Emergency Response	All	All
Local Emergency Planning Committee (LEPC)	All	County
Encourage Tree Trimming	Tornado, Winter Storms, Severe Thunder Storms, Hail, Wind	All
Hall Lane Road Elevation Project	Flood	
Inertial Valves on Gas Lines	Earthquake	All
Southern Illinois Earthquake Awareness/Out Reach Committee	Earthquake	All
I-Quake Drill	Earthquake	All
Mt. Vernon Stock Pile (Steel, Gravel, Other Materials to Temporary Replace Bridges)	Earthquake	Mt. Vernon

Meeting was adjourned.

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Special Review Meeting:

Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency
Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Friday, April 3, 2009, at 9:00 am

Meeting Time: 1 hrs

Place: Annex West Municipal Building

Planning Team/Attendance:

Robert Clodi	Greater Egypt Regional Planning & Development Commission
Ike Kirkikis	Greater Egypt Regional Planning & Development Commission
James Parkhill	Village of Bluford
Jack Dent	City of Nason
Ginger Droste	City of Nason
Joe Eckelberry	Village of Woodlawn
Donnie Wilkey	Village of Belle Rive
Delmar Shorb	Village of Belle Rive
Steve Lueker	Jefferson County

The meeting was called to order.

Robert Clodi thanked everyone for attending and began by introduced the Jefferson County Multi-Hazard Mitigation Plan. He explained that there were four over sighting agencies responsible for producing the plan. The plan is mandated by the Federal Disaster Mitigation Act of 2000. The benefit of producing a plan is to obtain eligibility for certain FEMA grant programs. Robert presented a list of four grant programs that require a mitigation plan to become eligible for funding. Examples were given to demonstrate the types of projects that could get funded from these programs.

A brief overview of the plan's content was described to the attendees. The Critical Facilities Map, Natural Hazards Map, and list of prioritized hazards were present to the attendees with a brief description of their roles and propose.

A list of individuals that have participated in the planning process was shown. Robert clarify that FEMA required each municipality to attend at least two meeting to become eligible for grant funding. Robert announced that Belle Rive, Bonnie, Ina, Nason, and Waltonville were lacking participation in the planning process. He further explain that even if a municipality adopts the

plan they will not be eligible for grant funding from FEMA if they have not participated in the plan's development.

Robert informed the attendees that there were two stipulations on adopting the plan. First, the plan has a five year shelf life after the County adopts the plan. Second, the municipalities have one year window to adopt the plan after the County has adopted it.

The next meeting was announced for Monday, April 13, 2009 at 9:00 a.m. The meeting will be held at the Annex West Municipal Building. The focus of the meeting will be to review the MHMP and add or correct any information.

The attendees were given a booklet of mitigation strategies produce by FEMA and were presented with the prioritized list of hazards for a second time. The attendees were asked to review the booklet and come up with mitigation strategies specific to their municipality. The objective of this exercise will demonstrate participation from those lacking communities.

The planning team web address was given to the attendees with a brief description of its content.

Robert closed his presentation by offering the GERPDC contact information and conducted a question and answer session.

Ike Kirkikis provide addition information on the planning process and purpose of the meeting on April 13th.

Meeting was adjourned.

IEMA Pre-Disaster Mitigation Plan

Assembly of the Jefferson County Planning Team Meeting 5:

Chairman: Benton Fitzjerrells, Jefferson County Emergency Management Agency
Plan Directors: Greater Egypt Regional Planning & Development Commission, SIUC Geology Department, and IUPIU-Polis

Meeting Date: Monday, April 13, 2008, at 9:00 am

Meeting Time: 1.00 hrs

Place: Annex West Municipal Building

Planning Team/Attendance:

Mark Stevens	Jefferson County Health Dept.
Bill Shega	Woodlawn Fire Dept.
Mike Shannon	City of Mt. Vernon
James Parkhill	Village of Bluford
David Coggins	Village of Nason
Jackie Dent	Village of Nason
Kevin Sargent	Mt. Vernon EMA/Mt. Vernon Fire Dept.
Steven Draege	Jefferson County Sheriff's Office
Mary Ellen Bechtel	Jefferson County Development Corp.
Wayne Hails	Jefferson County Board
Steve Lueker	Jefferson County Assessor's Office
Bruce Barkau	Tri-County Electric
Charlie Bruce	Cross Roads Hospital
Jonathan Remo	SIUC
Robert Clodi	Greater Egypt Regional Planning & Development Commission

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The meeting was called to order.

Robert Clodi presented the planning team with the Final Draft of the Jefferson County Pre-Disaster Mitigation Plan and two maps that define and locate the critical facilities and hazards in Jefferson County. He called onto the planning team to voice any changes or correction to be made in the plan.

Narrative: The planning team made several suggestions about the content of the plan. Listed below are the changes and corrections that were addressed at the meeting.

Page(s)	Changes
6	**Correction** Bill Shega, Title – Assistant Chief Kevin Sargent, Title – Mt. Vernon EMA/Mt. Vernon Fire Dept. Marty Schwartz, Title – Major Steve Damron, Title – County Board Randy Tepovich, Title – Manager **Addition** Jackie Dent, Title – Former Mayor, Organization – Village of Nason, Jurisdiction - Nason David Coggins, Title – Mayor, Organization – Village of Nason, Jurisdiction - Nason Steve Draege, Title – Officer, Organization – Jefferson County Sheriff's Office, Jurisdiction – Jefferson County Wayne Hails, Title – Board Member, Organization – Jefferson County Board, Jurisdiction – Jefferson County Delmar Shorb, Title – Trustee, Organization – Village of Belle Rive, Jurisdiction – Belle Rive Donnie Wilkey, Title – President, Organization – Village of Belle Rive, Jurisdiction – Belle Rive Joe Eckelberry, Title – Trustee, Organization – Village of Woodlawn/Woodlawn Fire Dept., Jurisdiction – Woodlawn Ginger Droste, Title – City Clerk, Organization – City of Nason, Jurisdiction – Nason
10	**Correction** James Parkhill, Bluford, Operations Manager, Participation – Briefed on plan and provided comments Kevin Sargent, Assistant Chief of Mount Vernon Fire Dept./Mt. Vernon EMA **Addition** Jurisdiction – Nason, Participating Member – Jackie Dent, Former Mayor, City of Nason, Participation Description – Member, MHMP planning committee Jurisdiction – Nason, Participating Member – David Coggins, Trustee, City of Nason, Participation Description – Member, MHMP planning committee Jurisdiction – Jefferson County, Participating Member – Wayne Hails Jefferson County Board, Participation Description – Member, MHMP planning committee

	Jurisdiction – Jefferson County, Participating Member – Steve Draege, Jefferson County Sheriff's Office, Participation Description – Member, MHMP planning committee Jurisdiction – Belle Rive, Participating Member – Delmar Shorb, Trustee, Village of Belle Rive, Participation Description – Member, MHMP planning committee Jurisdiction – Belle Rive, Participating Member – Donnie Wilkey, Pridient, Village of Belle Rive, Participation Description – Member, MHMP planning committee Jurisdiction – Woodlawn, Participating Member – Joe Eckelberry, Trustee, Village of Woodlawn, Participation Description – Member, MHMP planning committee Jurisdiction – Nason, Participating Member – Ginger Droste, City Clerk, City of Nason, Participation Description – Member, MHMP planning committee
16	**Correction** National Railway, Established - 1998 Mount Vernon Neon Sign, Established - 1998 Anheuser Busch Branded Products Distribution Center, Established – 1994 Rend Lake Conservancy District, Established – 1965 **Addition** Rend Lake Community College, Location – Ina, Established – 1966, # of Employees - 500, Type of Business – Higher Education Jefferson County, Location – Mount Vernon, Established – 1819, # of Employees – 170, Type of Business – County Government
85	**Addition** A list of references was left out. The following has been inserted at the end of Chapter four. **References:** National Climatic Data Center (NCDC). 2008. The Storm Events Database. http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms, last accessed August, 21, 2008. Bauer, R.A. 2008. Planned Coal Mine Subsidence in Illinois: A Public Information Booklet, Circular 569, Illinois Department of Natural Resources and Illinois Geologic Survey, Springfield, Illinois. http://www.isgs.uiuc.edu/education/pdf-files/c569.pdff, last accessed, July 16, 2008. Bauer, R.A. 2006. Mine Subsidence in Illinois: Facts for Homeowners, Circular 573, Illinois Department of Natural Resources and Illinois Geologic Survey, Springfield, Illinois. http://www.isgs.uiuc.edu/education/pdf-files/c573.pdf, last accessed, July 16, 2008.

	Homan, J.D. 2001, Where did that come from? Sudden sinkhole causes several accidents on U.S. Route 51. http://thesouthern.com/articles/2001/12/26/top/export6747.prt, last accessed, July, 3, 2008. Illinois Coal Association. 1992. Illinois coal facts: Springfield, Illinois, 64p. Panno, S.V., Weibel, C.P., Li, W. 1997, Karst Regions of Illinois, Open File Series 1997-2. Illinois Geologic Survey, Champaign, Illinois, 42 p. Pinter, N. 1993. Exercises in Active Tectonics: An Introduction to Earthquakes and Tectonic Geomorphology. Prentice Hall: Upper Saddle River, NJ. Stover, C.W., Coffman J.L. 1993, Seismicity of the United States, 1568-1989 (Revised), U.S. Geological Survey Professional Paper 1527. United States Government Printing Office, Washington. Tackett, M. 1990. Even the Kitchens Sink in Southern Illinois. Chicago Tribune. December 14, 1990. United States Geologic Survey (USGS). 2008. Earthquake Hazards Program, Magnitude / Intensity Comparison. http://earthquake.usgs.gov/learning/topics/mag_vs_int.php, last accessed, July 10, 2008. United States Geologic Survey (USGS). 2008. Earthquake Hazards Program, Illinois Earthquake History. http://earthquake.usgs.gov/regional/states/illinois/history.php, last accessed, July 10, 2008. United States Geologic Survey (USGS). 2007. Earthquake Hazard in the Heart of America. http://pubs.usgs.gov/fs/2006/3125/pdf/FS06-3125_508.pdf, last accessed July 10, 2008.
86	**Addition** Table 5-1 Jefferson County, NFIP Participation Date – 10/31/09
90	**Deletion** First sentence, “Jefferson County uses the Illinois Capital Development Board’s Building Code as its guide for building standards.”
101	**Correction** Table 5-6, Implement a plan for voluntary buyouts for structures within Jefferson County, Comments - The County EMA will oversee the implementation of this project. Local resources will be used to evaluate the applicable areas. Table 4-19 presents potential buyout properties. 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.

126	**Correction** Bus Facilities South Central Illinois Mass, Address – 15178 N. Hwy 37 Beck Bus Company, Telephone Number – (618) 2425685 Dyel Transportation, Address – 1301 Logan Ave., Telephone Number – (618) 244-6918 EOC Facilities Jefferson County Justice Center, Backup Power – Yes, Contact Person – Roger Mulch, Telephone Number (618) 244-8004 Fire Station Facilities list Jefferson Fire Protection District, Address – 1600 South 10th St., Backup Power – Yes Mt. Vernon City Fire Dept., Address - 1100 Main St., Backup Power – Yes, Number of Stories - 2 Woodlawn Fire Dept., Address – 102 South Central, Backup Power – Yes, Telephone Number (618) 735-2112 Mt. Vernon City Fire, Address – 2623 Logan Ave., Backup Power – Yes, Number of Stories – 1 Mt. Vernon City Fire, Address – 714 S 42nd St., Backup Power – Yes, Number of Stories – 1 Mt. Vernon City Fire, Address – 1111 Airport Rd. , Backup Power – Yes, Number of Stories – 1 Jefferson Fire Protection District, Address – 298 N Main, Backup Power – Yes, Number of Stories - 1 Jefferson Fire Protection District, Address – 303 W third, Backup Power – Yes, Number of Stories - 1 Jefferson Fire Protection District, Address – 9083 N Hottenson, Backup Power – Yes, Number of Stories - 1 Police Station Facilities list Jefferson County Sheriff, Backup Power – Yes, Contact Person – Roger Mulch Mt. Vernon Police Dept., Backup Power – Yes Jefferson County Emergency Telephone, Address – 911 Casey Ave., Contact Person – Blake Clemmons, Backup Power – Yes, Telephone Number (618) 242-6809 Bonnie Police Dept., Backup Power – Yes, Contact Person Kurt Hansleman Ina Police Dept., Contact Person - Bob Mash

127	**Deletion** School Facilities list Horace Mann Elementary School **Correction** Waste Water Facilities list Bluford STP, Backup Power – Yes Bonnie STP, Backup Power – Yes Mount Vernon Wastewater Treatment Facility, Backup Power – Yes Woodlawn STP, Backup Power – Yes
128	**Correction** Medical Care Facilities list Crossroads Community Hospital, Backup Power – Yes St. Mary's Good Samaritan, Backup Power – Yes **Move** Communication Facilities list should be listed on page 129.
129	**Correct** User Define list Walgreens Distribution Center, Backup Power – Yes, Number of Stories – 5 Continental Tire N.A., Backup Power – Yes, Number of Stories – 4 County Courthouse, Backup Power – Yes, Number of Stories 2, Year Built – 1939 Village of Woodlawn, Backup Power – Yes **Addition** National Guard Armory, Address 600 Shiloh Dr., Backup Power – Yes, Number of Stories _ 2, Primary Function – Armory, Replacement Cost – 50,000,000, Year Built – 2009
130	**Addition** Missing location of Sirens
142	**Correction** Joy Mining Machinery renamed Midwest Fabricating
Appendix A	**Addition** Minutes from Jefferson County Meeting 5

Appendix B	**Addition** Newspaper Articles

Jonathan Remo thanked everyone for coming and providing their input.

Meeting was adjourned.

Appendix B – Articles Published by Local Newspapers

Faculty to help 17 counties prepare for disaster

Project receives $1.3 million in federal funding

Allison Petty
DAILY EGYPTIAN

> **There is a real need in this area to look at what disasters can occur, have occurred in the past and … reduce the threat, should these things occur in the future.**
>
> — Nicolas Pinter, geology professor at SIU

Roughly $1.3 million in federal funds could help university faculty prepare southern Illinois for disaster.

Faculty members would work under a $1,288,000 grant to help 17 southern Illinois counties prepare for natural disasters, university officials announced Tuesday. The Federal Emergency Management Agency supplied the funding, which will last until 2010, said geology professor Nicholas Pinter.

"There is a real need in this area to look at what disasters can occur, have occurred in the past and … reduce the threat, should these things occur in the future," Pinter said.

He described the region as the "southern California of the Midwest," referencing a history of major floods, tornados and earthquakes in southern Illinois.

Pinter said he and other professors would collaborate with members of Indiana University-Purdue University Indianapolis and five Illinois regional planning commissions on the project.

Counties covered by the grant include Pulaski, Massac, Union, Johnson, Jackson, Williamson, Franklin, Jefferson, Perry, Gallatin, Edwards, White, Crawford, Bond, St. Clair and Clinton. The city of Cairo in Alexander County will also participate in the project.

Pinter said the grant would help officials meet federal requirements for disaster planning. He added that the funding would help pay for several students to help with the project.

Andy Flor is the first of these students.

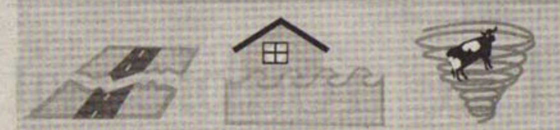
Flor, a graduate student from Flossmoor studying geology, said he would help gather and record data from the counties about their current emergency preparations.

Flor and other researchers will enter the data into a computer database, he said. Computer software helps develop more detailed planning and preparation for natural disasters.

> **You've got to go out and talk to the public. When we have a small tremor, public awareness is heightened and more people are interested in, 'Why are we having earthquakes? What does it mean potentially? Is it a threat, and what can we do about it?'**
>
> — Harvey Henson, geology professor at SIU

Southern Illinois natural disasters

New $1.3 million federal grant will allow university faculty to help 17 southern Illinois counties prepare for natural disasters.



New Madrid Earthquake of 1812
- Occurred in Missouri
- Ranked ninth-largest in the history of the United States
- Reached 7.9 magnitude level

Great Flood of 1993
- Caused $15 billion in damages
- Killed 50 people
- Covered nine states
- Remained in some areas for almost 200 days

Tri-State Tornado of 1925
- Affected 219 miles in Missouri, Illinois and Indiana
- Killed 695 people
- Injured 2,027 people
- Destroyed 15,000 homes

Source: National Weather Service

Michelle Arras ~ DAILY EGYPTIAN

"What we're really trying to do is inform communities where the flood plan is, what areas are going to be at risk, and you can plan around that," Flor said.

He added the project would focus on a variety of natural disasters.

"Floods are pretty obvious," Flor said. "In these counties they pose a big risk, but there's other things too — earthquakes, tornados."

Harvey Henson, a geology professor, said he has studied earthquakes for the past 22 years.

Under the grant, he said, it would be possible to raise a greater awareness about earthquakes.

"You've got to go out and talk to the public," Henson said. "When we have a small tremor, public awareness is heightened and more people are interested in, 'Why are we having earthquakes? What does it mean potentially? Is it a threat, and what can we do about it?'"

Henson said southern Illinois' position on the New Madrid Seismic Zone made it vulnerable to the possibility of a large quake.

"It's a backyard threat to southern Illinois," Henson said. "We have a small earthquake every so often which reminds us of that."

Allison Petty can be reached 536-3311 ext. 259 or allison.petty@siude.com.

O.E. 1/30/08

Daily Egyptian 1/30/08

Federal grant helps university lead 17-county disaster readiness effort

BY SCOTT FITZGERALD
THE SOUTHERN

Hear the full news conference online at www.thesouthern.com.

CARBONDALE — Southern Illinois is not immune to natural disaster.

With help from the federal government and Southern Illinois University Carbondale researchers, however, the 17-county region in this part of the state can get a leg up on being prepared and reacting when flooding, earthquakes or other major disasters occur.

SIUC officials announced Tuesday during a news conference in the Student Center that Federal Emergency Management Agency is funding a $1.2 million cooperative effort of SIUC and five Illinois regional planning commissions in writing pre-disaster mitigation plans.

FEMA requires and approves the plans that can open the door for more funding to help areas prepare for disaster.

"This grant from FEMA will help counties identify the risks they have and make plans to deal with any of those potential disasters," said Nicholas Pinter, a geology professor in SIUC's College of Science.

Pinter did not have a breakdown of the grant funding SIUC will share with colleagues from Indiana University-Purdue University Indianapolis' Polis Center who are assisting with the project and the five regional planning commissions.

Those commissions are: Southern Five Regional Planning Commission, Greater Egypt Regional Planning and Development Commission, Greater Wabash Regional Planning Commission and Southwestern Illinois Planning Commission.

"What's important is that the planning commissions would have to pay anywhere from $50,000 to $60,000 each to go out and hire

SEE GRANT / PAGE 7A

CHUCK NOVARA / THE SOUTHERN

Professor Nicholas Pinter walks from the podium after announcing SIUC will lead a $1.2 million emergency preparedness effort funded by the federal government.

1/30/08 S

GRANT: *Helps SIUC lead disaster readiness effort*

FROM PAGE 1

expertise to put together and write their mitigation plans. Under this arrangement, we're providing the expertise for free," Pinter said.

Pinter said he will hire another full-time staff person and several graduate students to work on the effort through 2010.

The money is administered through the Illinois Emergency Management Agency.

Andy Flor, a second-year graduate student in geology at SIUC, said the field work will consist of identifying areas that are prone to disasters and passing that information along to the planning commissions.

His graduate thesis, "Levee Safety, Levee Failure," identifies weak levee structures along the Mississippi in Southern Illinois, such as those structures near Grand Tower in Jackson County.

Grand Tower Levee District Commissioner Shawn McMahan said in April that high waters from the great flood of 1993 took their toll on the levee infrastructures.

About 17.5 miles of sliding levee needs to be stabilized and 75 locking structures need repair or replacement, McMahan said.

The local levee district's $15,000 annual budget collected from property taxes hardly meets the task at hand, said McMahan, who has sought federal assistance for many years.

scott.fitzgerald@thesouthern.com / 351-5076

The Southern Illinoisan 1/30/08

Planning for disaster

Planning team to hold meeting on April 13

Staff Report

MT. VERNON — The Jefferson County Pre-Disaster Mitigation Planning Team will host public sessions of its planning on April 13.

According to Ike Kirkikis, executive director of Greater Egypt Planning and Development Commission, getting input from all villages and municipalities within the county for the Pre-Disaster Mitigation Plan is imperative in receiving help should a disaster happen.

"Completion of the plan is critical to Jefferson County and its incorporated communities," Kirkikis stated. "(The Federal Emergency Management Administration) requires each unit of government to have a FEMA-approved plan to be eligible for Mitigation Grant Programs. The county-wide plan serves as an umbrella for all communities. Public participation

see PLANNING/Page 3A

PLANNING

continued from 1A

is vital to the development of the plan."

The planning team has been working for months to develop the plan with the assistance of Southern Illinois University at Carbondale and other groups.

The plan identifies potential natural hazards for Jefferson County and the proposed mitigation measures that are intended to reduce or eliminate the negative impact of a hazard, according to information from Greater Egypt Regional Planning and Development Commission.

The planning session will be held at 9 a.m. on April 13 at the Municipal Building West on Potomac Boulevard.

Additional information is available by contacting Greater Egypt Regional Planning and Development Commission at 549-3306.

Mt. Vernon Register-News
4/7/09

OUR VIEW

Public input will help finalize disaster plan

Should disaster strike in Jefferson County, such as the storms of 2006 or the flooding that affected Southern Illinois last spring, it will be important to be able to rely on assistance from outside the county and region to get through such a disaster.

The Jefferson County Pre-Disaster Mitigation Planning Team is working to make sure the county remains ready for assistance from the Federal Emergency Management Administration (FEMA) before assistance from the administration is needed here. The local team has worked, with help from Southern Illinois University-Carbondale, for months to develop a pre-disaster mitigation plan that serves as an umbrella for many of the villages and communities within the county.

But public input, and input from representatives from the villages covered by the plan is still needed. Ike Kirkikas of Greater Egypt Planning and Development Commission has been attending meetings to let the public know that attending at least two planning meetings and showing that each village has had input into the plan may be a key to getting help from the federal government should a disaster happen.

Participation in the plan is an easy thing to do to ensure a plan is in place and that help will be coming when it is needed.

Mt. Vernon Register-New
4/8/2009

Planning team to identify potential hazards

Proposed measures to reduce or altogether eliminate the natural hazards

BY DANIELLE TYLER
SENTINEL NEWS STAFF

MT. VERNON — For many months the Jefferson County Pre-Disaster Mitigation Planning Team has been working on a plan to identify potential natural hazards for Jefferson County, as well as proposed measures intended to reduce, or altogether eliminate, the negative impact of a hazard.

The planning team, Greater Egypt Regional Planning & Development Commission Robert Clodi explained, is a group of individuals recognized by the Jefferson County Board who have provided information regarding the content of the plan, such as critical facilities, including fire departments, schools, airports, communication towers, dams, highway bridges, hazardous material facilities and railroads, county and municipality profiles, economic information, and mitigation strategies.

The plan includes examined scenarios, Clodi said, such as tornadoes, flooding, and the effect of a large scale earthquake on the area. For example, the team looked at three different possibilities using an extensive database — a 7.7 New Madrid earthquake, a 7.1 Wabash earthquake and a 5.5 local Jefferson County fault line.

Please see **Hazards,** Page 3A

Hazards:

Continued From Page 1A

According to Clodi, the local fault line earthquake is believed to be the most devastating — with a potential of causing an estimated $50.1 million in economic loss.

Research into the incident of a tornado, traveling south of Woodlawn, to the center of Mt. Vernon and to Bluford, revealed a natural disaster such as that could cause as much as $101 million in damage, based on the strength of the tornado.

"We identified critical facilities, the loss of life, what kind of services would be needed, how many people would be needing shelter ... We also did historical research on hazards affecting Jefferson County in the past," Clodi said. "We looked at hazards and prioritized them."

Tornadoes, he said, took the top priority, with flooding coming in last.

Mitigation strategies, Clodi explained, are the most important aspect of the plan.

"We do everything from identifying snow routes, to looking at better coverage of tornado sirens, identifying roads that are flood prone," he said.

The plan is mandated, Clodi said, as part of the Federal Disaster Act of 2000.

"They require us to have a plan in place to be eligible for federal assistance in the event of a disaster," he said. "That is the carrot at the end of this."

Once the plan is reviewed by both the Illinois Emergency Management Agency and FEMA, it will be presented to the county board for approval.

Public participation and input in the plan is welcome, Clodi said.

The team will host two public planning sessions at 9 a.m. on Friday and April 13 at the Annex West Municipal Building.

dtyler@morningsentinel.com

Mt. Vernon Sentinel
4/2/2009

Appendix C – Adoption Resolution

RESOLUTION NO. 2009-3

ADOPTING THE JEFFERSON COUNTY MULTI-HAZARD MITIGATION PLAN

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

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

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

WHEREAS, Jefferson County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

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

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

ADOPTED THIS 27th DAY OF July, 2009.

Chairman, Jefferson County Board

Attested by:

COUNTY CLERK SEAL JEFFERSON COUNTY, ILL.

Appendix D – Jefferson County Historical Hazards

Table of Content

Fire

"House fire kills two people in Mount Vernon, IL on July 3, 2008." Photo provided by: http://www.wpsdtv.com/news/local/story.aspx?content_id=ae429f7a-3542-425f-b110-944411cd4452

Flooding

FARMS DECLARED DISASTER AREAS
July 18, 2008
http://www.register-news.com/archivesearch/local_story_200095206.html

“A resident carries his family’s pets to higher ground in borrowed pet carriers followed in the background by his daughters. Their mobile home park on Reed Station Road in Carbondale flooded and the entire park was evacuated.”
FLOOD KILLS TWO IN JEFFERSON COUNTY
Date: Wednesday, march 19, 2008
http://www.thesouthern.com/articles/2008/03/19/front_page/23813859.txt

Thunderstorms/ High Winds/ Hall/ Lightning

STORM DESTROYS BARN, SNARLS TRAFFIC
January 30, 2008
http://www.register-news.com/archivesearch/local_story_030154144.html

Wind Storm damage in Mount Vernon on July 21, 2006. Photo provided by: The Southern

STORM CAUSES DAMAGE IN ZEIGLER
Friday, August 11, 2006
http://www.southernillinoisian.com/articles/2006/08/11/top/17203677.txt

Storm with wind damage to a garage in Boyd, IL on Sunday April 2, 2006. Picture provided by: http://www.crh.noaa.gov/pah/?n=apr0206event

PRESIDENT DECLARES 30 LOCAL COUNTIES DISASTER
On April 21, 2002 tornadoes, thunderstorms and damaging winds caused damage to 30 counties in Southern Illinois.
http://thesouthern.com/articles/2002/05/22/top/export9433.prt

Tornado

"Several trees were destroyed on the Zeigler Circle Sunday evening as a wave of strong storms ripped through Randolph and Perry Counties." April 2, 2006. Photo provided by: The Southern

The photos above are from Murphysboro, IL after the December 18, 1957 Tornado. Four Tornados were reported in Mount Vernon ranging from F2 to F4. Photo provided by: The Southern

ANNIVERSARY OF DEADLY 1888 CYCLONE IS TODAY
February 19, 1888
http://www.register-news.com/archivesearch/local_story_050101111.htm

Winter Storms

FIRST SNOW CREATS HAVOC
Thursday, December 9, 2005
http://www.thesouthern.com/articles/2005/12/09/top/10002295.txt

SNOWED UNDER: REGION CLEANING UP AFTER ROUNDS OF SNOWSTORMS
Wednesday, December 22, 2004
http://www.thesouthern.com/articles/2004/12/23/top/doc41ca4ef75fd98399413877.txt

Appendix E – Hazard Map

Appendix F – Complete List of Critical Facilities

Bus Facilities

Facility Name	Address	Back-up Power	City	Contact Person	Replacement Cost ($1,000)	Telephone Number
South Central Illinois Mass	15178 N Hwy 37	No	Mt Vernon	Patty Gowler	1209.9	6182420240
Beck Bus Company	2201 Brownsville Road	No	Mt Vernon	Micheal Brays	1209.9	6182425685
Dyel Transportation	1301 Logan Ave.	No	Mt Vernon		300	6182446918

Police Station Facilities

Facility Name	Address	Back-up Power	City	Contact Person	Replacement Cost ($1,000)	Telephone Number
Jefferson County Sheriff	911 Casey Ave	Yes	Mt Vernon	Roger Mulch	1554	6182448004
Mt Vernon Police Dept	211 N 10th St	Yes	Mt Vernon	Chris Mendenall	1554	6182422727
Jefferson County Emrgncy Tlphn	911 Casey Ave.	Yes	Mt Vernon	Blake Clemmons	1554	6182426809
Bonnie Police Department	270 South Railroad Ave	Yes	Bonnie	Kut Hansleman	1554	6182426700
Ina Police Department	306 South Elm Street	No	Ina	Bob Mash	1554	6184375305

Waste Water Facilities

Facility Name	Address	Back-up Power	City	Replacement Cost ($1,000)
BLUFORD STP	SEWAGE TREATMENT PLANT	Yes	BLUFORD	73926
BONNIE STP	3RD AND RAILROAD	Yes	BONNIE	73926
BELLE RIVE STP	FAS ROUTE 830 NORTH	No	BELLE RIVE	73926
DIX-KELL WATER&SEWER COMM STP	P.O. BOX 108	No	DIX	73926
INA STP	P.O. BOX 147	No	INA	73926
MOUNT VERNON WASTEWATER TREATMENT FACILI	105 EAST PERKINS	Yes	MOUNT VERNON	73926
WALTONVILLE STP	VILLAGE HALL	No	WALTONVILLE	73926
WOODLAWN STP	ROUTE 1	Yes	WOODLAWN	73926
Rolling Meadows Mobile Home Park	16584 North IL Highway 37	No	Mt Vernon	73926

EOC Facilities

Facility Name	Address	Back-up Power	City	Contact Person	Number of Stories	Replacement Cost ($1,000)	Telephone Number
Mt Vernon Civil Emergency Svc	211 N 10th St	No	Mt Vernon	Chris Mendenall	1	1110	6182425050
Jefferson County Justice Center	911 Casey Avenue	Yes	Mt Vernon	Roger Mulch	2	18000	6182448004

Airport Facilities

Facility Name	Back-up Power	City	Facility Owner	Latitude	Longitude	Primary Function	Replacement Cost ($1,000)
DAVY JONES /PVT/	No	BONNIE	Private	38.2230	-88.8838	Private	6049.5
PRAIRIE	No	IRVINGTON	Private	38.4265	-89.1316	Private	6049.5
MOUNT VERNON	No	MOUNT VERNON	Public	38.3234	-88.8585	Public	6049.5

Medical Care Facilities

Facility Name	Address	Back-up Power	City	Facility Class	Number of Beds	Primary Function	Replacement Cost ($1,000)	Telephone Number
CROSSROADS COMMUNITY HOSPITAL	8 DOCTORS PARK ROAD	Yes	Mt Vernon	EFHM	55	GENERAL HO	13500	6182418544
ST MARY'S GOOD SAMARITAN	605 NORTH 12TH STREET	Yes	Mt Vernon	EFHL	188	GENERAL HO	13500	6182411008
Mt Vernon Health Care	5 Doctors Park Road	No	Mt Vernon	EFHL	106			6182442861
White Oak Health Care	1700 White Street	No	Mt Vernon	EFHM	64			6182424075
Countryside Manor	606 East Highway 15	No	Mt Vernon	EFHL	101			6182421800
Residential Living Center	608 New Fairfield	No	Mt Vernon	EFHM	50			6182449318
Heritage Woods	1033 South 42nd Street	No	Mt Vernon	EFHM	65			6182419518
Heritage Landing	4260 Heritage Ave	No	Mt Vernon	EFHM	50			6182421728
Mt Vernon Care Center	1717 Jefferson Ave	No	Mt Vernon	EFHM	64			6182442861
Oak Terrace	4219 Lincolnshire Drive	No	Mt Vernon	EFHS	16			6182422117
Sutton House	4241 Lincolnshire Drive	No	Mt Vernon	EFHS	16			6182420132
Nature Trail Healthcare Center	1001 South 34th St	No	Mt Vernon	EFHM	70			6182425700

User Define

Facility Name	Address	Backup Power	City	Misc Comments	Number of Stories	Primary Function	Replacement Cost ($1,000)	Telephone Number	Year Built
WALGREENS DISTRIBUTION CENTER	5100 LAKE TERRACE DRIVE NE	Yes	MT. Vernon	1015000 sq ft	5	Distribution	101,500		1990
Continental Tire N.A.	11525 N. IL HWY 142	Yes	MT. Vernon	3049200 sq ft	4	Manufacturing	304,920		1974
Mt Vernon City Hall	1100 Main St	No	MT. Vernon					6182425000	
County CourtHouse	100 South 10th Str	Yes	MT.Vernon		3			6182448000	1939
Illinois National Guard Armory	205 South 7th	No	MT.Vernon					6182421061	
Village of Dix	217 North Main	No	Dix					6182667265	
Village of Woodlawn	202 S Central	Yes	Woodlawn					6187352110	
Village of Waltonville	406 S Broadway	No	Waltonville					6182797226	
Village of Belle Rive	211 S Main	No	Belle Rive					6187562289	
National Guard Armory	600 Shioh Dr.	Yes	Mt. Vernon		2	Armory	50,000		2009

Fire Station Facilities

Facility Name	Address	Back-up Power	City	Contact Person	Number of Stories	Replacement Cost ($1,000)	Telephone Number
Belle Rive Fire Department	102 S Hickory	No	Belle Rive	Delmer Shorb	1	812	6187562289
Jefferson Fire Protection District	1600 South 10th Street	Yes	Mount Vernon	Charles Huntman	1	812	6182443824
Mt Vernon City Fire Department	1100 Main Street	Yes	Mount Vernon	James Brown	2	812	6182422000
Waltonville Volunteer Fire Department As	304 West Main Street	No	Waltonville	Edward Dulaney	1	812	6182793331
Webber Township Fire Protection District	501 North Parker	No	Bluford	Marion Sneed Jr	1	812	6187352111
Woodlawn Fire District	202 South Central	Yes	Woodlawn	Michael Poninski	1	812	6187352112
Mt Vernon City Fire Department	2623 Logan Ave	Yes	Mount Vernon	James Brown	1	812	6182422000
Mt Vernon City Fire Department	714 S 42nd Str	Yes	Mount Vernon	James Brown	1	812	6182422000
Mt Vernon City Fire Department	1111 Airport Rd	Yes	Mount Vernon	James Brown	1	812	6182422000
Jefferson Fire Protection District	298 N Main	Yes	Dix	Charles Huntman	1	812	6182443824
Jefferson Fire Protection District	303 W Third	Yes	Ina	Charles Huntman	1	812	6182443824
Jefferson Fire Protection District	9083 N Hottenson	Yes	Opdyke	Charles Huntman	1	812	6182443824

Railroad Bridges

Bridge Name	Daily Traffic (cars/day)	Flood Structure Foundation Type	Latitude	Longitude	Maximum Span Length (m)	Replacement Cost ($1,000)	Structure Type	Total Bridge Length (m)	Year Built (Between 1500 and 2100)
ICG RR	25	4	38.3729	-88.7240	9.8	169.83	30200009	51	1900
SOUTHERN RR	275	4	38.3666	-88.9103	4	76.59	30200009	23	1900
ICG RR	45	4	38.2906	-88.7322	7.6	79.92	30200009	24	1900
ICG RR	150	4	38.2576	-88.7355	9.4	86.58	30200009	26	1900
ICG RR	35	4	38.1953	-88.7412	9.4	86.58	30200009	26	1900
ICG RR	100	4	38.1844	-88.7426	6.7	76.59	30200009	23	1900
ICG RR	75	4	38.3685	-88.7235	24.1	293.04	30200009	88	1900
ICG RR	550	4	38.2797	-88.7337	9.8	86.58	30200009	26	1979
ICG RR	400	4	38.2024	-88.7416	9.8	86.58	30200007	26	1900
SOUTHERN RR	359	4	38.3884	-88.9260	18.3	63.27	30200009	19	1900
ICG RR	50	4	38.4164	-88.7195	7.3	103.23	30200009	31	1900
IC RR	3000	4	38.1889	-89.0400	13.4	126.54	30200006	38	1900
ICG RR	275	4	38.4459	-88.7159	9.8	86.58	30200007	26	1900
ICG RR	175	4	38.1569	-88.7454	8.2	116.55	30200007	35	1900

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
City Hall		CDFLT	No	Mt Vernon Fire	38.3181	-88.9054	Siren	
City Park		CDFLT	No	Mt Vernon Fire	38.3049	-88.9221	Siren	
Woodlawn Fire		CDFLT	No	Woodlawn	38.3287	-89.0353	Siren	618-735-2112
Waltonville Fire		CDFLT	No	Waltonville	38.2112	-89.0422	Siren	618-279-7226
Rend Lake College (Building A)		CDFLT	No		38.1308	-88.9192	Siren	
Times Square Mall		CDFLT	No	Mt Vernon Fire	38.3142	-88.9386	Siren	
Summersville School		CDFLT	No	Mt Vernon Fire	38.3270	-88.8667	Siren	
Jefferson Fire Bldg		CDFLT	No	Village of Ina	38.1511	-88.9068	Siren	
Village Hall		CDFLT	No	Village of Bonnie	38.2031	-88.9026	Siren	
WMIX 940		CBR	No	MOUNT VERNON	38.3706	-88.9234	AM	
WMIX 940		CBR	No	MOUNT VERNON	38.3542	-89.0081	AM	
WIBV CH 271		CBR	No	MOUNT VERNON	38.4020	-89.1359	FM	
WBMV CH 209		CBR	No	MOUNT VERNON	38.3709	-88.9223	FM	
WDML CH 295		CBR	No	WOODLAWN	38.3581	-89.0990	FM	
WMIX-FM CH 231		CBR	No	MOUNT VERNON	38.3706	-88.9223	FM	
WAPO CH 213		CBR	No	MOUNT VERNON	38.3109	-88.9365	FM	
WQBC331	1.7 MI SE	CBR	No	BONNIE	38.1778	-88.8892		
WQBC331		CBR	No	BONNIE	38.1778	-88.8892		
WPTE692	17589 E ADAMS ROAD	CBR	No	BONNIE	38.1841	-88.8232		
WPTE692		CBR	No	BONNIE	38.1841	-88.8232		
WPTE692		CBR	No	BONNIE	38.1841	-88.8232		
KZC253	RT 15 6 MI W OF MOUNT VERNON	CBR	No	WOODLAWN	38.3078	-89.0618		
KZC253	1/10 MI N OF RT 142	CBR	No	BELLE RIVE	38.2342	-88.7378		
KZC253		CBR	No	WOODLAWN	38.3078	-89.0618		
KZC253		CBR	No	BELLE RIVE	38.2342	-88.7378		
WPYF285	HWY 15 2 KM E	CBR	No	BLUFORD	38.3511	-88.7517		
WPYF285		CBR	No	BLUFORD	38.3511	-88.7517		
WQBD500	HWY. 15, 2 KM E	CBR	No	BLUFORD	38.3511	-88.7517		
WQBD500		CBR	No	BLUFORD	38.3511	-88.7517		
KSE52	4 MI NW OF	CBR	No	MOUNT VERNON	38.3345	-88.9676		
WNTV791	1 MI N OF	CBR	No	INA	38.1709	-88.9039		
WNTW420	VARIOUS LOCATIONS	CBR	No	WOODLAWN	38.3620	-89.0348		
WPAR507	I57 I64	CBR	No	MT VERNON	38.3517	-88.9439		
KNDR917	CR1100E	CBR	No	MT VERNON	38.2973	-88.9473		
KNDR917		CBR	No	MT VERNON	38.2973	-88.9473		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WQIU455	440 Duncan Lane	CBR	No	Dix	38.4351	-88.9535		
WQIU455	HWY 15 2 KM E	CBR	No	Bluford	38.3511	-88.7517		
WQIU455	IL RT 37 2 KM S	CBR	No	Ina	38.1281	-88.9056		
WPLS951	825 CASEY	CBR	No	MOUNT VERNON	38.3148	-88.9048		
WPLS951		CBR	No	MOUNT VERNON	38.3148	-88.9048		
WNHB888	1 EAGLE COURT	CBR	No	MOUNT VERNON	38.3314	-88.9667		
WNHB888		CBR	No	MOUNT VERNON	38.3314	-88.9667		
KNKB445	NORTH OF HIGHWAY 15, 7 MILES ENE OF MT.	CBR	No	MT. VERNON	38.3511	-88.7517		
KGI736	RR 1 WALTONVILLE RD	CBR	No	MOUNT VERNON	38.2989	-88.9062		
KBZ451		CBR	No		38.3214	-88.9709		
WPWY569	15090 E. LYNCHBERG RD	CBR	No	BELLE RIVE	38.2875	-88.8672		
WPWY569	WEST OF HAMILTON LN. ON STRANZA RD.	CBR	No	MT. VERNON	38.1828	-88.7078		
WNXI854	INT OF ELM & 4TH ST	CBR	No	BLUFORD	38.3264	-88.7445		
WNXI854		CBR	No	BLUFORD	38.3264	-88.7445		
WNRG515	RAILROAD MILEPOST 149.2 HBD 4.6 MI S	CBR	No	WALTONVILLE	38.1481	-89.0404		
KNKN477	5325 East Vassar Road	CBR	No	WOODLAWN	38.3609	-89.0459		
KNKN477	21060 EAST SANDPIPER ROAD	CBR	No	Bluford	38.3289	-88.7558		
WLV454	5325 EAST VASSAR ROAD	CBR	No	WOODLAWN	38.3609	-89.0459		
WPNC539	501 HARLAN RD	CBR	No	MOUNT VERNON	38.2964	-88.9178		
WPOS351	21060 E SANDPIPER RD	CBR	No	BLUFORD	38.3289	-88.7559		
KNKN477	5325 East Vassar Road	CBR	No	WOODLAWN	38.3609	-89.0459		
WPYS783	WATER TANK, CR 1950 & CR 15	CBR	No	WOODLAWN	38.4056	-89.0808		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
KNKN477	21060 EAST SANDPIPER ROAD	CBR	No	Bluford	38.3289	-88.7558		
KNKN477	5325 East Vassar Road	CBR	No	WOODLAWN	38.3609	-89.0459		
KNKN477	21060 EAST SANDPIPER ROAD	CBR	No	Bluford	38.3289	-88.7558		
KNGP583	REND LAKE MINE	CBR	No	NASON	38.1573	-88.9678		
WPMV233		CBR	No		38.1442	-89.0337		
WQC362	IL RT 148 4 1/2 N	CBR	No	SESSER	38.1442	-89.0337		
KNCN822	1 MI E	CBR	No	BLUFORD	38.3512	-88.7517		
KNCN822		CBR	No	BLUFORD	38.3512	-88.7517		
WPTJ491	610 METERS WEST OF MOUNT VERNON	CBR	No	MOUNT VERNON	38.3168	-88.8739		
WPHE861		CBR	No		38.2873	-88.8587		
WPIG515	HWY 142 S 2 KM E OF RT 37	CBR	No	MOUNT VERNON	38.2873	-88.8920		
WPIG751	HWY 142 S 2 KM E OF RT 37	CBR	No	MOUNT VERNON	38.2873	-88.8587		
WPIG751		CBR	No	MOUNT VERNON	38.2873	-88.8587		
WPNY467	HIGHWAY 142 SOUTH OF	CBR	No	MOUNT VERNON	38.2873	-88.8587		
WPNY467		CBR	No	MOUNT VERNON	38.2873	-88.8587		
WQGI256	HWY142 SOUTH OF	CBR	No	MOUNT VERNON	38.2873	-88.8587		
WQGI256		CBR	No	MOUNT VERNON	38.2873	-88.8587		
WQDZ700	HWY 15 2 KM E	CBR	No	BLUFORD	38.3511	-88.7517		
WQDZ700		CBR	No	BLUFORD	38.3511	-88.7517		
KNJZ418	8 DOCTORS PARK RD	CBR	No	MOUNT VERNON	38.3112	-88.9376		
WPEY513	5 MI W 2.5 MI S	CBR	No	MOUNT VERNON	38.2673	-88.9945		
WPEY513		CBR	No	MOUNT VERNON	38.2673	-88.9945		
WQIX443	310 S. 12TH ST	CBR	No	MT. VERNON	38.3155	-88.9061		
WQIX443		CBR	No	MT. VERNON	38.3155	-88.9061		
WPLQ321	100 WEST SOUTH ST	CBR	No	DIX	38.4398	-88.9378		
WPYS783	CORNER OF 500 E & 1700 N	CBR	No	WOODLAWN	38.3722	-89.0489		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WPLQ321		CBR	No	DIX	38.4398	-88.9378		
WQIJ504	22582 N. IL 37	CBR	No	DIX	38.4356	-88.9374		
WQIJ504	158 N. MAIN ST.	CBR	No	DIX	38.4564	-88.9427		
WQFP415	1301 LOGAN ST	CBR	No	MOUNT VERNON	38.3109	-88.9076		
WQFP415		CBR	No	MOUNT VERNON	38.3109	-88.9076		
WNMT565	105 E PERKINS	CBR	No	MOUNT VERNON	38.3034	-88.8853		
WNMT565		CBR	No	MOUNT VERNON	38.3034	-88.8853		
WQDU402	1515 MAIN ST	CBR	No	MT VERNON	38.3172	-88.9094		
WQDU402		CBR	No	MT VERNON	38.3172	-88.9094		
WQDU641	ADJACENT TO EVWR TRACKS & ROUTE 142	CBR	No	OPDYKE	38.2601	-88.7905		
WPBG789	.1 KM NW OF I57 & SR 148	CBR	No	MOUNT VERNON	38.2845	-88.9414		
WPBG789		CBR	No	MOUNT VERNON	38.2845	-88.9414		
WPNT207		CBR	No		38.3173	-88.9031		
WNIJ874	HWY 15 2 KM E	CBR	No	BLUFORD	38.3512	-88.7517		
WNIJ874		CBR	No	BLUFORD	38.3512	-88.7517		
KNEM667	5.2 KM S ON IL RT 148	CBR	No	WALTONVILLE	38.2234	-89.0695		
KNEM667		CBR	No	WALTONVILLE	38.2234	-89.0695		
WPUT379	1.6 KM NE NASON	CBR	No	BONNIE	38.1887	-88.9489		
WPUT379		CBR	No	BONNIE	38.1887	-88.9489		
KUU458	605 N 12TH ST	CBR	No	MOUNT VERNON	38.3231	-88.8592		
WPCG686	7.5 MI N	CBR	No	BLUFORD	38.4584	-88.7320		
WPCG686		CBR	No	BLUFORD	38.4584	-88.7320		
WPCG686	INT CR 2325 & 2325N	CBR	No	BLUFORD	38.4651	-88.7153		
WPCG686		CBR	No	BLUFORD	38.4651	-88.7153		
WPGZ443		CBR	No		38.3001	-88.9167		
WPGZ443		CBR	No	MOUNT VERNON	38.3001	-88.9167		
WQL286	5 MI S & 2 MI W	CBR	No	MOUNT VERNON	38.2339	-88.9431		
WQL286		CBR	No	MOUNT VERNON	38.2339	-88.9431		
WNJQ705	TENTH AND BROADWAY	CBR	No	MOUNT VERNON	38.3171	-88.9040		
WNBL278	1.7 MI S INT ICGRR & ST HWY 15	CBR	No	BLUFORD	38.3223	-88.7320		
WPYS783	E OF 775, E ON SR 15	CBR	No	WOODLAWN	38.3086	-89.0080		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WPCD972	E SIDE CR2200E ADJ ICRR TRKS 1.7 MI S	CBR	No	BELLE RIVE	38.2070	-88.7409		
KFQ433	ICGRR YD OFC 1.7 MI S OF INT OF ICGRR &	CBR	No	BLUFORD	38.3223	-88.7320		
WPPA545	I57 & I64 2 MI NNW	CBR	No	MOUNT VERNON	38.3517	-88.9439		
WPPA545		CBR	No	MOUNT VERNON	38.3517	-88.9439		
WNWA256	IL RT 37 1 1/4 MI S	CBR	No	INA	38.1281	-88.9056		
WNWA256		CBR	No	INA	38.1281	-88.9056		
WNWL795	IL RT 37 1 1/4 MI S	CBR	No	INA	38.1281	-88.9056		
WNWL795		CBR	No	INA	38.1281	-88.9056		
WQDC375	440 DUNCAN LANE	CBR	No	MT VERNON	38.4351	-88.9535		
WQDC375		CBR	No	MT VERNON	38.4351	-88.9535		
WQDC378	IL RT 37 2 KM S	CBR	No	INA	38.1281	-88.9056		
WQDC378		CBR	No	INA	38.1281	-88.9056		
WDM548	1701 BROADWAY	CBR	No	MOUNT VERNON	38.3162	-88.9067		
WQAZ971	18TH & WATERWORKS ROADS	CBR	No	MT. VERNON	38.3187	-88.9117		
WQAZ971		CBR	No	MT. VERNON	38.3187	-88.9117		
KSG319	1600 S 10TH ST	CBR	No	MOUNT VERNON	38.3017	-88.9026		
KUI652	3RD & CROSS STS	CBR	No	INA	38.1501	-88.9167		
WYC665	MAIN ST	CBR	No	DIX	38.4417	-88.9362		
KET261	100 S. 10TH ST.	CBR	No	MOUNT VERNON	38.3166	-88.9032		
KNIH901	1000 S 9TH ST	CBR	No	MOUNT VERNON	38.3056	-88.9014		
KNIH901		CBR	No	MOUNT VERNON	38.3056	-88.9014		
KSB298	COUNTY COURTHOUSE	CBR	No	MOUNT VERNON	38.3115	-88.9677		
KSB298	911 CASEY AVE	CBR	No	MOUNT VERNON	38.3143	-88.9019		
KSB298		CBR	No	MOUNT VERNON	38.3146	-88.9003		
WPKN518	1322 GEORGE ST	CBR	No	MOUNT VERNON	38.3320	-88.9098		
WPKN518		CBR	No	MOUNT VERNON	38.3320	-88.9098		
WPKT549	107 E PERKINS ST	CBR	No	MOUNT VERNON	38.3067	-88.8845		
WNVD557	CENTRAL ST	CBR	No	WOODLAWN	38.3181	-89.0320		
WNVD557		CBR	No	WOODLAWN	38.3181	-89.0320		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WPKT549		CBR	No	MOUNT VERNON	38.3067	-88.8845		
WPTX994	HWY 15 - 2 KM EAST OF	CBR	No	BLUFORD	38.3511	-88.7517		
WPTX994		CBR	No	BLUFORD	38.3511	-88.7517		
WPZS260		CBR	No		38.3174	-88.9032		
WQGE860	100 S. 10TH ST.-- COUNTY COURTHOUSE	CBR	No	MOUNT VERNON	38.3173	-88.9032		
WQGE860		CBR	No	MOUNT VERNON	38.3173	-88.9032		
WQGF613	911 CASEY AVE	CBR	No	MOUNT VERNON	38.3143	-88.9019		
WQGF613		CBR	No	MOUNT VERNON	38.3144	-88.9012		
WNWC329	RICHVIEW RD .65 MI W RT 37N & N RT 15W	CBR	No	MOUNT VERNON	38.3281	-88.9220		
WNWC329		CBR	No	MOUNT VERNON	38.3281	-88.9220		
KUC903	EXISTING CATV TOWER	CBR	No	MT. VERNON	38.3317	-88.9323		
WPPY573	0.1 KM NW OF I57 & SR 148	CBR	No	MOUNT VERNON	38.2845	-88.9414		
WPPY573		CBR	No	MOUNT VERNON	38.2845	-88.9414		
KNJK890	.5 MI W 157 & 5 MI N 164	CBR	No	DIX	38.4112	-88.9601		
KNJK890		CBR	No	DIX	38.4112	-88.9601		
WPCR746	HWY 15 1 MI E	CBR	No	BLUFORD	38.3512	-88.7517		
WPCR746		CBR	No	BLUFORD	38.3512	-88.7517		
WQH725	809 S 17TH ST	CBR	No	MOUNT VERNON	38.3095	-88.9092		
WQH725		CBR	No	MOUNT VERNON	38.3095	-88.9092		
WNWV869	1 MI N JEFFERSON CTY LINE & 1.2 MI W OF	CBR	No	BELLE RIVE	38.1389	-88.7792		
WNWV869		CBR	No	BELLE RIVE	38.1389	-88.7792		
WPMH902	23473 N DECATUR LANE	CBR	No	DIX	38.4689	-89.0092		
WPMH902		CBR	No	DIX	38.4689	-89.0092		
KNCS974	1322 GEORGE ST	CBR	No	MOUNT VERNON	38.3320	-88.9098		
WPIS311	114 CENTRAL ST	CBR	No	WOODLAWN	38.3334	-89.0362		
WPIS311		CBR	No	WOODLAWN	38.3334	-89.0362		
KNNH242	CENTRAL ST	CBR	No	WOODLAWN	38.3181	-89.0320		
KNNH242		CBR	No	WOODLAWN	38.3181	-89.0320		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
KGT473	20TH ST & WATERWORKS RD	CBR	No	MOUNT VERNON	38.3201	-88.9153		
KSB299	211 N 10TH ST	CBR	No	MOUNT VERNON	38.3153	-88.9014		
KSK413	1111 AIRPORT RD	CBR	No	MOUNT VERNON	38.3231	-88.8592		
KSK413	1100 MAIN ST	CBR	No	MOUNT VERNON	38.3139	-88.9031		
KSK413	714 VETERANS MEMORIAL DR	CBR	No	MOUNT VERNON	38.3101	-88.9417		
KSK413		CBR	No	MOUNT VERNON	38.3101	-88.9417		
KZH928	211 N 10TH	CBR	No	MOUNT VERNON	38.3153	-88.9014		
KZH928		CBR	No	MOUNT VERNON	38.3153	-88.9014		
WNLY903	211 N TENTH	CBR	No	MOUNT VERNON	38.3153	-88.9014		
WNLY903		CBR	No	MOUNT VERNON	38.3153	-88.9014		
WNNW500	1100 MAIN	CBR	No	MOUNT VERNON	38.3139	-88.9031		
WNNW500		CBR	No	MOUNT VERNON	38.3139	-88.9031		
WPME265		CBR	No		38.3089	-88.9173		
KNEC946		CBR	No	MOUNT VERNON	38.3276	-88.9070		
KNEC946	700 GEORGE ST	CBR	No	MOUNT VERNON	38.3276	-88.9070		
KSR917	TERMINAL BLDG MOUNT VERNON OUTLAND AIRPO	CBR	No	MOUNT VERNON	38.3209	-88.8620		
WQBS913	200 Aviation Drive Mt. Vernon Airport	CBR	No	Mt Vernon	38.3217	-88.8583		
WPNY764	1100 SHAWNEE STREET	CBR	No	MOUNT VERNON	38.3076	-88.9359		
WPNY764		CBR	No	MOUNT VERNON	38.3076	-88.9359		
WPTS927	1.3 MI NNE OF NASON	CBR	No	BONNIE	38.2084	-88.9584		
WPTS927		CBR	No	BONNIE	38.2084	-88.9584		
WQFY819	CR-1550 N (Mt. Vernon# 90144)	CBR	No	MOUNT VERNON	38.3516	-88.9439		
WQFY819		CBR	No	MOUNT VERNON	38.3516	-88.9439		
WPEF832	2 MI E OF JCT 64 & 51	CBR	No	MOUNT VERNON	38.4020	-89.1359		
WPEF832		CBR	No	MOUNT VERNON	38.4020	-89.1359		
WPLA265	1 MI N RT 15 MARKERS 2125E & 1550N	CBR	No	BLUFORD	38.3512	-88.7517		
WPPB457	5 MI S OF I64 5 MI W OF	CBR	No	MOUNT VERNON	38.3542	-89.0081		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WPLA265		CBR	No	BLUFORD	38.3512	-88.7517		
WPPD685	HWY 15 2 KM E	CBR	No	BLUFORD	38.3512	-88.7517		
WPPD685		CBR	No	BLUFORD	38.3512	-88.7517		
KNRS277	HWY 15 2 KM E	CBR	No	BLUFORD	38.3512	-88.7517		
KNRS277		CBR	No	BLUFORD	38.3512	-88.7517		
WPSV604	11332 N. TRITON LN.	CBR	No	MOUNT VERNON	38.2964	-88.9178		
WPSV604		CBR	No	MOUNT VERNON	38.2964	-88.9178		
WPUK676	6419 E YALE STREET	CBR	No	WOODLAWN	38.3586	-89.0333		
WPUK676		CBR	No	WOODLAWN	38.3586	-89.0333		
WPUK678	9384 N RAINBOW LANE	CBR	No	MT VERNON	38.2633	-88.9153		
WPUK678		CBR	No	MT VERNON	38.2633	-88.9153		
WQHJ418	I57 I64	CBR	No	MT VERNON	38.3517	-88.9439		
WPFK518	1 MI S	CBR	No	DIX	38.4248	-88.9423		
WPFK518		CBR	No	DIX	38.4248	-88.9423		
KNDX513	.6 MI W OF HWY 37 MP 81 W	CBR	No	MOUNT VERNON	38.3989	-88.9370		
KSI708	C&EI TOWER ROCKAWAY ST AT SOUTHERN C&EI	CBR	No	MOUNT VERNON	38.3112	-88.8926		
KTH443	1.0 MI S TOWN ADJACENT TO RR TRACKS	CBR	No	DIX	38.4248	-88.9423		
WIR67	1 MI S OF	CBR	No	DIX	38.4248	-88.9426		
WNRQ995	SOU RR MP 93.2W	CBR	No	MARLOW	38.3195	-88.7937		
WPTE216	Main St crossing at MP 87.15W	CBR	No	Mt Vernon	38.3181	-88.8964		
WPTE216	Broadway St crossing at MP 87.20W	CBR	No	Mt Vernon	38.3172	-88.8967		
WPTE216	TR 414 crossing at MP 91.15 W	CBR	No	Marlow	38.3199	-88.8308		
KQY807	SHORT ST	CBR	No	BLUFORD	38.3306	-88.7289		
WBM716	3501 BROADWAY	CBR	No	MT VERNON	38.2950	-88.9223		
WHB700	3501 BROADWAY	CBR	No	MOUNT VERNON	38.2950	-88.9223		
WPNQ248	RT 37 2.5 MI N	CBR	No	MOUNT VERNON	38.3706	-88.9234		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WPTE216	Markham City Rd crossing at MP 97.00 W	CBR	No	Bluford	38.3323	-88.7259		
WPYK979	South St RR crossing @ MP 078.08W	CBR	No	Dix	38.4396	-88.9449		
WQBT797	Tolle Rd RR crossing @ RR MP 86.21W	CBR	No	Mount Vernon	38.3520	-88.9348		
WQHR257		CBR	No	DIX	38.4248	-88.9423		
WPNY503	WATER TWR ON CR 39 2.1 KM W OF CR 1700	CBR	No	MOUNT VERNON	38.4317	-88.8637		
WPNY503		CBR	No		38.3731	-88.8287		
WPTF825	3000 CAROLINE	CBR	No	MOUNT VERNON	38.3317	-88.9322		
WPTF825		CBR	No	MOUNT VERNON	38.3317	-88.9322		
WPTF825		CBR	No	MOUNT VERNON	38.3317	-88.9322		
WPGY960	INDIAN HILLS DR	CBR	No	MOUNT VERNON	38.3317	-88.9323		
WPMC250	2810 E UNIVERSAL RD	CBR	No	ASHLEY	38.2781	-89.1043		
WPMC250		CBR	No	ASHLEY	38.2781	-89.1043		
WPGV648	1 1/2 MI N	CBR	No	OPDYKE	38.2631	-88.7892		
WPGV648		CBR	No	OPDYKE	38.2631	-88.7892		
KNAI836	400 E 900 N	CBR	No	ASHLEY	38.2584	-89.0751		
KNAI836		CBR	No	ASHLEY	38.2584	-89.0751		
WPKK466	STATE HWY 18 1 KM E	CBR	No	BLUFORD	38.3512	-88.7517		
WPKK466		CBR	No	BLUFORD	38.3512	-88.7517		
WRZ362	RR 2 BOX 149 SHILOH DR	CBR	No	MOUNT VERNON	38.3237	-88.9759		
WRZ362		CBR	No	MOUNT VERNON	38.3237	-88.9759		
WPWC373		CBR	No	Mount Vernon	38.3174	-88.9566		
WPWC373		CBR	No	Ina	38.1305	-88.9172		
WQHV889	NEAR MAPLE ST. & 5TH ST.	CBR	No	INA	38.1486	-88.9033		
WPUW754	5100 LAKE TERRACE, NE	CBR	No	MOUNT VERNON	38.3267	-88.9614		
WPUW754		CBR	No	MOUNT VERNON	38.3268	-88.9637		
WSB697	MAIN & COLE STS	CBR	No	WALTONVILLE	38.2001	-89.1001		
WSB697		CBR	No	WALTONVILLE	38.2001	-89.1001		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
WQHV889	2500 FT. EAST OF STATE RT. 37 & CR 36	CBR	No	MT. VERNON	38.2839	-88.8947		
WQHV889	CORNER OF STATE RT. 148 & CR 500 NORTH	CBR	No	WALTONVILLE	38.1978	-89.0386		
WPPU538	MOUNT VERNON UPDYKE TWR	CBR	No	MOUNT VERNON	38.3201	-88.9145		
WPVV790	3000 CAROLINE	CBR	No	MOUNT VERNON	38.3317	-88.9322		
WPVV790		CBR	No	MOUNT VERNON	38.3317	-88.9322		
WPMM337	1322 GEORGE ST	CBR	No	MOUNT VERNON	38.3320	-88.9098		
WPMM337		CBR	No	MOUNT VERNON	38.3320	-88.9098		
WNZE731	0.1KM NW OF I57 & SR148	CBR	No	MT. VERNON	38.2845	-88.9414		
WNZE731		CBR	No	MT. VERNON	38.2845	-88.9414		
WPTH867	211 W. 3rd Street	CBR	No	Ina	38.1729	-88.9056		
WPTH870	14275 N. Pump Road	CBR	No	Mt. Vernon	38.3404	-88.8969		
KXP602	510 S 6TH ST	CBR	No	MOUNT VERNON	38.3128	-88.8956		
KXP602		CBR	No	MOUNT VERNON	38.3128	-88.8956		
KB60681	HWY 15 2 KM E	CBR	No	BLUFORD	38.3511	-88.7517		
KB60681		CBR	No	BLUFORD	38.3511	-88.7517		
KNKN506	NORTH 42ND STREET	CBR	No	MT VERNON	38.3537	-88.9423		
KNKN506	NORTH OAK STREET NEAR INA	CBR	No	INA	38.1751	-88.9087		
WML704	N 42ND ST	CBR	No	MOUNT VERNON	38.3536	-88.9422		
WPOP929	601 N OAK	CBR	No	INA	38.1750	-88.9087		
WQEP337	CONTINENTAL TIRE NORTH AMERICA PLANT	CBR	No	MT VERNON	38.2906	-88.8906		
WQEP337		CBR	No	MT VERNON	38.2906	-88.8906		
WPSP807	102 POTOMAC BLVD	CBR	No	MT VERNON	38.3125	-88.9567		
KNEA647	DUBOIS BLACKTOP 1/2 MI W	CBR	No	WALTONVILLE	38.2251	-89.0751		
WPTP831	5100 LAKE TERRACE NE	CBR	No	MOUNT VERON	38.3759	-88.8787		

Communication Facilities

Facility Name	Address	Analysis Class	Back-up Power	City	Latitude	Longitude	Primary Function	Telephone Number
KNEA647		CBR	No	WALTONVILLE	38.2251	-89.0751		
WQBD900	3920 BROADWAY STREET	CBR	No	MT. VERNON	38.3145	-88.9392		
KSA200	3906 W BROADWAY	CBR	No	MOUNT VERNON	38.3151	-88.9392		
KSA200		CBR	No	MOUNT VERNON	38.3151	-88.9392		
WNET226	3906 WEST BROADWAY	CBR	No	MOUNT VERNON	38.3150	-88.9392		
WNTI686	1 MI S OF TOWN ADJACENT TO RAILROAD TRAC	CBR	No	DIX	38.4248	-88.9423		
WNTR348	1 MI S OF TOWN ADJ TO RR TRACKS	CBR	No	DIX	38.4248	-88.9423		
WQBB873	.22 MI N OF INTERSECTION RACKWAY ST. & E	CBR	No	MT VERNON	38.3101	-88.8917		
WNDJ934	300 S OF MP & SEABOARD RR XING MP 274	CBR	No	MOUNT VERNON	38.3051	-88.8914		
WNDJ934	4.3 MI S AT REND LAKE MINE	CBR	No	WALTONVILLE	38.1456	-89.0326		
WPBZ391	MP 267.1 MVN SUB 3.5 MI S	CBR	No	KELL	38.4406	-88.8970		
WPBZ391	MP 280.8 MVN SUB 1 MI S	CBR	No	BAKERVILLE	38.2434	-88.9012		
WPBZ391		CBR	No		38.4248	-88.9423		
WPBZ391		CBR	No	KELL	38.4406	-88.8970		
WQCV479	MP 111.0, .5 MI WEST OF	CBR	No	SCHELLER	38.1871	-89.1038		
WQBA578		CBR	No	MOUNT VERNON	38.3264	-88.9182		
WPPZ753	STATE HIGHWAY 15 1 KM E OF	CBR	No	BLUFORD	38.3512	-88.7517		
WPPZ753		CBR	No	BLUFORD	38.3512	-88.7517		
KNKI633	1322 GEORGE STREET	CBR	No	MT. VERNON	38.3320	-88.9098		
KNKI633	1322 GEORGE STREET	CBR	No	MT. VERNON	38.3320	-88.9098		
WPTP831		CBR	No	MOUNT VERON	38.3759	-88.8787		

School Facilities

Facility Name	Address	Back-up Power	City	Contact Person	Number of Students	Phone Number	Replacement Cost ($1,000)
MT VERNON ALTERNATIVE SCHOOL	2401 VETERNS MEMORL	No	MOUNT VERNON		52	6182448044	555
HORACE MANN ELEM SCHOOL	1901 PERKINS AVE	No	MOUNT VERNON		297	6182448067	555
ST MARY ELEMENTARY SCHOOL	1416 MAIN ST	No	MT VERNON	Father John Iffert	175	6182425353	555
MT VERNON CHRISTIAN SCHOOL	817 Woodland Dr	No	MT VERNON	Tim Reynolds	50	6182445404	555
LIGHTHOUSE MENNONITE SCHOOL	23338 ILLINOIS HYW 15	No	BLUFORD	John High Jr	6	6187328570	555
VICTORY CHRISTIAN ACADEMY	1719 BROADWAY	No	MT VERNON	Tammy Meyer	27	6182423330	555
MT VERNON HIGH SCHOOL	320 S 7TH ST	No	MOUNT VERNON	Terry Milt	1389	6182443700	555
UMCH ALTERNATE SCHOOL	2023 RICHVIEW RD	No	MT VERNON		30	6182421070	555
MT VERNON ALTERNATIVE SCHOOL	1714 BROADWAY ST	No	MOUNT VERNON		8	6182448040	555
BETHEL GRADE SCHOOL	1201 BETHEL RD	No	MOUNT VERNON	Craig Kujawa	120	6182448095	555
DODDS ELEM SCHOOL	14975 East Bakerville Road	No	MOUNT VERNON	Craig Clark	167	6182448070	555
FARRINGTON ELEM SCHOOL	20941 East Divide Rd	No	BLUFORD	Monte Jo Clark	50	6187554414	555
FIELD ELEMENTARY SCHOOL	21075 N HAILS LN	No	TEXICO	Gina Ilbery	311	6187554611	555
MCCLELLAN ELEMENTARY SCHOOL	9475 N IL HWY 148	No	MOUNT VERNON	Angie Mills	61	6182448072	555
Zadock CASEY MIDDLE SCHOOL	1829 BROADWAY ST	No	MOUNT VERNON	Kevin Settle	325	6182448060	555
DR ANDY HALL ELEM SCHOOL	301 S 17TH ST	No	MOUNT VERNON	Kevin Settle	153	6182448060	555
BENJAMIN FRANKLIN EARLY DEVELOPMENT	500 HARRISON ST	No	MOUNT VERNON	Kevin Settle	325	6182448087	555
J L BUFORD ELEM SCHOOL	623 S 34TH ST	No	MOUNT VERNON	Kevin Settle	330	6182448064	555
HEAD START KENNETH MARTIN CTR	521 PERKINS AVE	No	MOUNT VERNON	Kevin Settle	6	6182448060	555
MOUNT VERNON HIGH SCHOOL	320 S 7TH ST	No	MOUNT VERNON	Terry Milt	1389	6182443700	555
ROME COMM CONS ELEM SCHOOL	233 W SOUTH ST	No	DIX	Dwain Baldridge	303	6182667214	555
WALTONVILLE GRADE SCHOOL	802 W KNOB	No	WALTONVILLE	Dave Thomas	266	6182797221	555
WALTONVILLE HIGH SCHOOL	804 W KNOB	No	WALTONVILLE	Dave Thomas	101	6182797211	555
WOODLAWN SCHOOL	301 S CENTRAL ST	No	WOODLAWN	Jerry Travelstead	352	6187352661	555
WOODLAWN COMM HIGH SCHOOL	300 N CENTRAL LN	No	WOODLAWN	Alan Estes	210	6187352631	555
Bluford Grade School	907 West 6th Street	No	Bluford	Scott Porter	290	6187328242	555
Ina Grade School	511 South Elm	No	Ina	Charles Thierry	102	6184375361	555
Opdyke - Belle Rive School Dist	601 South Gum	No	Belle Rive	John Wheatley	100	6187562486	555
Opdyke - Belle Rive School Dist	19380 East 4th Street	No	Opdyke	John Wheatley	94	6187562492	555
Primary Center	401 North 30th	No	Mt Vernon	Kevin Settle	673	6182448068	555
Summersville Grade School	1118 East Fairfield Road	No	Mt Vernon	Robert Danner	300	6182448079	555
Webber High School	310 South Elm	No	Bluford	Roger Pauley	192	6187326121	555
Amish School - Joe Byler	18923 East Lynchberg Road	No	Opdyke				555
Amsih School - Freeman Mast	18801 East Highland Road	No	Belle Rive				555

Hazardous Material Facilities

Facility Name	Address	CAS Registry Number	Chemical Name	Chemical Quality (lbs.)	City	Contact Person	EPA ID	Latitude	Longitude	Standard Industrial Code
CONTINENTAL GENERAL TIRE INC.	11525 N IL HWY. 142	N982	ZINC COMPOUNDS	7	MOUNT VERNON	HENRY EISENGA	ILD068556422	38.2917	-88.8917	3011
CONTINENTAL GENERAL TIRE INC.	11525 N IL HWY. 142	110543	N-HEXANE	4	MOUNT VERNON	HENRY EISENGA	ILD068556422	38.2917	-88.8917	3011
CONTINENTAL GENERAL TIRE INC.	11525 N IL HWY. 142	N096	COBALT COMPOUNDS	4	MOUNT VERNON	HENRY EISENGA	ILD068556422	38.2917	-88.8917	3011
Midwest Fabricating	4 INDUSTRIAL PARK	7439965	MANGANESE	3	MOUNT VERNON	MATTHEW F. HALEY	ILD119561397	38.2875	-88.9000	3532
MOUNT VERNON NEON	1 NEON DR.	N420	LEAD COMPOUNDS	4	MOUNT VERNON	NEAL FUCHS	ILD984848275	38.3156	-88.9706	3641
VANEX INC.	1700 S. SHAWNEE ST.	N230	CERTAIN GLYCOL ETHER	4	MOUNT VERNON	W. RAY GRUBB	ILD006317614	38.3014	-88.8908	2851
CONSOLIDATION COAL CO.REND LAKE MINE	STATE RTE. 148 NORTH 3.7 MI. N. OF SESSE	7647010	HYDROCHLORIC ACID	2	SESSER	THOMAS F. HOFFMAN	ILD982064156	38.1436	-89.0333	1222

Dams

Facility Name	Action Plan	Distance to Nearest City (mile)	Drainage Area of Dam (sq. miles)	Height of Dam (ft)	Length of Dam (ft)	Latitude	Longitude	Maximum Discharge Rate (ft3/sec)	Maximum Storage Area (acre-ft)	Name of River	NATDAM ID Number	Nearest City to Dam	Normal Storage Area (acre-ft)	Owner of the Dam	Purpose of the Dam	Relative Hazard Rating Emergency	Replacement Cost ($1,000)	Spillway Type on Dam	Spillway Width (ft)	Surface Area of Water (acres)	Year Built
MILLER LAKE DAM	Y	6	4.9	40	870	38.3967	-88.8933	6550	3510	TRIB CASEY FORK	IL00171	MOUNT VERNON	1593	City of Mount Vernon	SR	H		U	60	142	1947
FREEMAN/ /EAST LAKE DAM	N	7	0	23	680	38.1930	-89.0474	0	369	TRIB BUCK CREEK	IL00168	WALTONVILLE	204	Freeman United Coal Minin	O	S		U	40	0	1961
LAKE JAYCEE DAM	Y	2	2.5	30	875	38.3697	-88.8987	3257	2110	TRIB CASEY FORK	IL00170	MOUNT VERNON	1024	City of Mount Vernon	RS	S		U	51	115	1905
SUPERIOR LAKE DAM	N	0.1	0	23	350	38.4163	-89.0465	0	729	TRIBBIG MUDDY RIVER	IL00172	MOUNT VERNON	294	Superior Oil Company	S	L		U	680	0	1953
L & N RESERVOIR	Y	0.1	0	25	720	38.3214	-88.9146	607	353	TRIB CASEY FORK	IL00173	MOUNT VERNON	182	City of Mount Vernon	S	H		U	113	0	1910
HAWTHORNE HILLS LAKE DAM	N	30	0	18	483	38.3606	-88.9248	0	266	TRIB CASEY FORK	IL00174	PLUMFIELD	126	Hawthorne Hills Associati	R	S		U	85	0	
RAW WATER RESERVOIR DAM	N	30	0	20	1560	38.1512	-89.0285	0	1427	WARD BRANCH	IL00175	PLUMFIELD	674	Inland Steel Company	OR	S		U	52	0	1966
ILLINOIS CENTRAL RESERVOIR DAM	N	25	0	15	775	38.3091	-88.7321	0	874	FOURMILE CREEK	IL00176	MILL SHOATS	421	Illinois Central Gulf Rai	R	S		U	100	0	1926
WALTONVILLE LAKE DAM	N	7	0.5	22	872	38.2063	-89.0405	425	153	TRIB BUCK CREEK	IL00169	WALTONVILLE	75	Village of Waltonville	R	S		U	21.3	18	1979
FREEMAN UNITED/ORIENT 3/FINE REFUSE DAM	N	2	0	26	3050	38.1750	-89.0400	16	674	TRIB BIG MUDDY RIVER	IL50017	WALTONVILLE	547	Freeman United Coal Minin	O	L		U	2	805	1981
FREEMAN UNITED/ORIENT 6 /SOUTH SLURRY CE	Y	2	0.2	54	8400	38.1947	-89.0310	19	3907	TRIB EAST HURRICANE CREEK	IL50061	WALTONVILLE	3485	Freeman United Coal Minin	O	S		U	7	106	1985
LAGG LAKE 1 DAM	N	3	0	18	330	38.4177	-88.8912	0	88	TRIB CASEY CREEK	IL00947	IDLEWOOD	50	Lowell Lagg	R	L		U	27	0	1976
LAKE NORMANDY DAM	N	7	0	19	550	38.3873	-88.9255	0	106	TRIB LIMESTONE CREEK	IL00894	MOUNT VERNON	58	Alfred Bodine	R	L		U	90	0	1969
LAGG LAKE 2	N	3	0	32	825	38.4228	-88.8980	0	799	TRIB CASEY FORK	IL00949	IDLEWOOD	561	Lowell Lagg	R	L		U	0	0	1976
O'DANIEL LODGE LAKE DAM	N	11	0	19	435	38.3952	-88.7320	0	200	TRIB HORSE CREEK	IL00946	WAYNE CITY	123	William O'Daniel	R	L		U	33	0	1973
WALTONVILLE MANUFACTURING LAKE DAM	N	3	0.18	20	930	38.1900	-89.0600	183	112	TRIB BUCK CREEK	IL00945	WALTONVILLE	83	Waltonville Manufactuing,	O	L		U	5	9	1952
FREEMAN UNITED/ /2 PORTAL LAKE	N	49	0	15	1120	38.2083	-89.0970	0	130	TRIB LITTLE MUDDY RIVER	IL00944	DESOTO	64	Freeman United Coal Minin	O	L		U	42	0	1974
O'DANIEL LODGE LAKE 2 DAM	N	11	0	32	800	38.3943	-88.7298	0	267	TRIB HORSE CREEK	IL00948	WAYNE CITY	213	William O'Daniel	R	L		U	72	0	
CONSOL/REND LAKE/SED POND 008 DAM	N	10	0.28	18	1800	38.1445	-89.0190	1328	122	TRIB MOREDOCK LAKE	IL50352	BENTON	58	Consolidated Coal Company	O	L		U	15	9	1995
CONSOL/REND LAKE MINE/SLURRY CELL 2 DAM	Y	3	0.19	100	11500	38.1500	-89.0500	5	8580	TRIB REND LAKE	IL50348	SESSER	7535	Consolidation Coal Compan	O	H		N	0	120	
TEDRICK LAKE DAM	N	0	1.03	29	400	38.2500	-88.8400	640	320	TRIB DODDS CREEK	IL50410		201	Roger Tedrick	R	L		U	162	23	
LEWIS INDUSTRIAL PARK DETENTION DAM	N	0	0.45	12	1900	38.3265	-88.9515	90	218	TRIB WEST DITCH	IL50400	NONE	0	City of Mt. Vernon	C	L		U	4	10	
CONSOL/REND LAKE MINE/SLURRY POND DAM	Y	0.1	0	75	8500	38.1448	-89.0146	109	4770	TRIB REND LAKE	IL50164	EWING	3937	Consolidation Coal Compan	O	H		U	4	0	
FREEMAN UNITED/ORIENT 3/CLAR POND SADDLE	N	0.1	0	11	65	38.1874	-89.0416	813	312	TRIB BUCK CREEK	IL50178	WALTONVILLE	185	Freeman United Coal Minin	O	L		U	32	0	1985
ORIENT NO.3	N	2	1.45	23	0	38.2498	-89.0004	200	285		IL83458	WALTONVILLE	0	FREEMAN UNITED COAL	S	L		U	0	0	
ORIENT NO.3	N	2	0.15	30	0	38.2469	-88.9999	300	440		IL83459	WALTONVILLE	0	FREEMAN UNITED COAL	T	L		U	0	0	
ORIENT NO.6	N	1	0.25	20	0	38.2472	-89.0001	142	400		IL83464	WALTONVILLE	0	FREEMAN UNITED COAL	T	S		U	0	0	
ORIENT NO.6	N	1	0.16	43	0	38.2463	-88.9975	140	3500		IL83465	WALTONVILLE	0	FREEMAN UNITED COAL	T	S		U	0	0	
REND LAKE	N	4	2.73	25	0	38.1583	-89.0333	916	990		IL83490	SESSER	0	CONSOLIDATION COAL CO.	S	S		U	0	0	
REND LAKE	N	4	0.12	75	0	38.1583	-89.0333	446	4770		IL83491	SESSER	0	CONSOLIDATION COAL CO.	T	S		U	0	0	
REND LAKE	N	4	0.7	13	0	38.1583	-89.0333	1750	250		IL83492	SESSER	0	CONSOLIDATION COAL CO.	S	L		U	0	0	
ORIENT NO.6 MINE	N	2	0.08	60	0	38.1877	-89.0232	189	1200		IL83514	PITTSBURG	0	FREEMAN UNITED COAL	S	S		U	0	0	

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
FAU-8729	HWB28	7	City Highway Agency	12.2	3200			38.3075	-88.9245	3.1	2	153.5663	6	55			1988
000028333732122	HWB26	15	Town Highway Agency	7	100	4	9	38.1246	-89.0910	14	1	336.15	8	30	505	1600	1996
000041000109644	HWB15	43	State Highway Agency	12	14450	4	6	38.1875	-88.9042	15	3	2054.97	8	0	402	1600	1964
000041000209645	HWB15	43	State Highway Agency	12	14450	4	7	38.1877	-88.9042	15	3	2054.97	8	0	402	1600	1964
000041000309646	HWB10	36	State Highway Agency	13	14450	4	6	38.2468	-88.9063	13	3	1360.8	8	0	201	1600	1965
000041000409647	HWB10	36	State Highway Agency	13	14450	4	6	38.2469	-88.9064	13	3	1360.8	8	0	201	1600	1965
000041000509648	HWB15	88	State Highway Agency	19	14450	4	8	38.2533	-88.9114	18	5	4205.52	5	0	402	2002	1966
000041000609649	HWB15	88	State Highway Agency	19	14450	4	8	38.2534	-88.9115	18	5	4205.52	5	0	407	2002	1966
000041000709650	HWB15	72	State Highway Agency	13	14450	4	7	38.2724	-88.9312	39	3	3440.88	N	39	407	1600	1968
000041000809651	HWB15	78	State Highway Agency	18	17900	4	9	38.2839	-88.9394	24	4	3727.62	N	4	402	2003	1968
000041000909652	HWB15	78	State Highway Agency	18	17900	4	9	38.2837	-88.9399	24	4	3727.62	N	4	402	2003	1968
000041001209655	HWB15	43	State Highway Agency	18	18800	4	7	38.3257	-88.9557	15	3	2054.97	N	11	402	1600	1967
000041001309656	HWB15	43	State Highway Agency	17	18800	4	7	38.3258	-88.9557	15	3	2054.97	N	1	402	1600	1967
000041001409657	HWB15	46	State Highway Agency	16	9050	4	6	38.4400	-88.9523	12	4	2198.34	N	14	402	1600	1968
000041001509658	HWB15	46	State Highway Agency	13	10500	4	7	38.4400	-88.9526	12	4	2198.34	N	14	402	1600	1968
000041001609659	HWB15	64	State Highway Agency	12	10500	4	5	38.4432	-88.9536	24	3	3058.56	N	41	402	1600	1967
000041001709660	HWB15	64	State Highway Agency	12	10500	4	6	38.4434	-88.9537	24	3	3058.56	N	41	402	1600	1967
000041001909662	HWB15	65	State Highway Agency	10	2550	4	7	38.3074	-89.0806	18	3	3106.35	6	45	402	1600	1954
000041002009663	HWB26	13	State Highway Agency	10	2200	4	6	38.3075	-89.0661	6	2	291.33	3	0	104	1971	1921
000041002109664	HWB17	20	State Highway Agency	10	2200	4	4	38.3073	-89.0549	10	2	591.4	6	45	505	1993	1921
000041002309666	HWB17	31	State Highway Agency	10	5500	4	3	38.3099	-88.9887	15	2	916.67	3	0	505	1971	1921
000041002409667	HWB26	10	State Highway Agency	10	5500	4	6	38.3096	-88.9807	9	1	224.1	3	0	505	1971	1923
000041002509668	HWB15	100	State Highway Agency	26	29400	4	6	38.3127	-88.9519	36	4	4779	N	23	402	1600	1968
000041002609670	HWB15	43	State Highway Agency	13	7200	4	6	38.3171	-88.8852	15	3	2054.97	8	12	402	1990	1957
000041002709671	HWB15	51	State Highway Agency	10	4800	4	3	38.3189	-88.8479	18	3	2437.29	5	30	402	1600	1957
000041002809673	HWB26	14	State Highway Agency	13	4050	4	5	38.3432	-88.7409	7	2	313.74	6	0	201	1600	1957
000041003109677	HWB26	10	State Highway Agency	12	6100	4	5	38.2838	-88.9030	10	3	224.1	7	0	201	1952	1921
000041003209678	HWB15	117	State Highway Agency	10	4250	4	7	38.2701	-88.8990	18	2	5591.43	5	39	402	1986	1921
000041003509681	HWB26	9	State Highway Agency	12	3400	4	6	38.2253	-88.9031	9	1	201.69	8	0	101	1600	1952
000041003609682	HWB5	39	State Highway Agency	10	2800	4	5	38.1861	-88.9035	13	3	1414.92	8	0	104	1952	1921
000041003809684	HWB26	9	State Highway Agency	12	3550	4	5	38.4007	-88.9285	8	1	201.69	5	40	101	1600	1930
000041003909685	HWB15	46	State Highway Agency	11	4750	4	6	38.3933	-88.9294	16	3	2198.34	N	27	402	1989	1957
000041004009687	HWB15	38	State Highway Agency	11	4350	4	7	38.2886	-88.8753	18	2	1816.02	5	45	402	1989	1930
000041004109688	HWB15	37	State Highway Agency	11	4350	4	7	38.2876	-88.8737	18	2	1768.23	5	30	402	1989	1930
000041004209689	HWB15	50	State Highway Agency	11	4350	4	7	38.2867	-88.8723	18	3	2389.5	5	0	402	1989	1930
000041004309690	HWB26	7	State Highway Agency	11	3600	4	6	38.2780	-88.8649	7	1	156.87	5	0	101	1600	1928
000041004409691	HWB26	9	State Highway Agency	11	3600	4	6	38.2647	-88.8165	8	1	201.69	3	0	101	1600	1928
000041004509692	HWB26	7	State Highway Agency	11	2800	4	5	38.2391	-88.7517	7	1	156.87	7	0	101	1600	1928
000041004609693	HWB15	39	State Highway Agency	10	2700	4	8	38.2318	-88.7383	13	3	1863.81	N	30	402	1984	1934
000041004809695	HWB26	18	State Highway Agency	10	2700	4	7	38.2164	-88.7093	8	2	403.38	5	0	201	1990	1930
000041004909707	HWB26	7	City Highway Agency	9	7500	4	4	38.3196	-88.8832	7	1	156.87	5	0	101	1600	1925
000041005109716	HWB15	77	State Highway Agency	9	3100	4	7	38.3421	-88.9539	23	4	3679.83	N	23	402	1600	1968
000041005309740	HWB15	81	State Highway Agency	9	550	4	6	38.3735	-88.9499	24	4	3870.99	N	0	402	1600	1967
000041005409744	HWB15	68	State Highway Agency	9	650	4	7	38.2055	-88.9111	20	4	3249.72	N	0	402	1600	1964
000041005509765	HWB15	68	State Highway Agency	10	3950	4	5	38.1547	-88.9137	20	4	3249.72	N	5	402	1600	1965
000041005609773	HWB17	72	State Highway Agency	9	250	4	8	38.4475	-88.9549	21	4	2129.04	N	14	502	1600	1967
000041005709781	HWB17	69	State Highway Agency	9	150	4	7	38.4178	-88.9501	21	4	2040.33	N	0	502	1600	1967
000041005809831	HWB15	79	State Highway Agency	9	200	4	7	38.2584	-88.9225	23	4	3775.41	N	30	402	1600	1965
000041005925738	HWB15	95	State Highway Agency	10	1350	4	7	38.2711	-88.9343	33	3	4540.05	N	0	402	1600	1968
000041006022553	HWB15	68	State Highway Agency	13	11500	4	7	38.3348	-88.9545	31	3	3249.72	N	36	402	1600	1968
000041006122554	HWB15	104	State Highway Agency	10	325	4	7	38.3334	-88.9572	36	3	4970.16	N	20	402	1600	1968
000041006225741	HWB15	81	State Highway Agency	14	3600	4	6	38.2720	-88.8585	30	2	3870.99	N	24	402	1600	1971
000041006325742	HWB15	72	State Highway Agency	9	300	4	7	38.2741	-88.8321	27	2	3440.88	N	3	402	1600	1971
000041006425743	HWB15	74	State Highway Agency	9	150	4	7	38.3855	-89.1271	28	2	3536.46	N	0	402	1600	1972
000041006525744	HWB15	75	State Highway Agency	9	100	4	7	38.2719	-88.7116	27	2	3584.25	N	0	402	1600	1971

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
000041006626603	HWB15	72	State Highway Agency	9	600	4	7	38.2702	-88.8694	27	2	3440.88	N	0	402	1600	1971
000041006726604	HWB15	58	State Highway Agency	14	6350	4	6	38.2740	-88.9008	19	2	2771.82	N	11	402	1600	1972
000041006826605	HWB15	60	State Highway Agency	15	6350	4	7	38.2739	-88.9007	19	2	2867.4	N	11	402	1600	1972
000041006922555	HWB15	75	State Highway Agency	21	1700	4	7	38.3620	-89.0347	27	2	3584.25	N	0	402	1600	1974
000041007022556	HWB15	60	State Highway Agency	12	6350	4	7	38.2766	-88.8211	22	3	2867.4	N	35	402	1600	1974
000041007122557	HWB15	60	State Highway Agency	12	6350	4	7	38.2765	-88.8213	22	3	2867.4	N	35	402	1600	1974
000041007222560	HWB15	71	State Highway Agency	9	350	4	7	38.2754	-88.7862	27	2	3393.09	N	1	402	1600	1972
000041007522561	HWB15	50	State Highway Agency	12	11500	4	8	38.3607	-89.0129	18	3	2389.5	5	0	402	1600	1974
000041007622563	HWB15	50	State Highway Agency	12	11500	4	8	38.3607	-89.0131	18	3	2389.5	5	0	402	1600	1974
000041007722564	HWB15	78	State Highway Agency	13	11750	4	7	38.3619	-89.0713	23	4	3727.62	N	3	402	1600	1974
000041007822565	HWB15	78	State Highway Agency	13	11750	4	7	38.3621	-89.0713	23	4	3727.62	N	3	402	1600	1974
000041007922566	HWB15	73	State Highway Agency	9	75	4	7	38.3536	-88.9923	30	2	3488.67	N	15	402	1600	1974
000041008022567	HWB15	75	State Highway Agency	9	2200	4	6	38.3426	-88.9694	31	2	3584.25	N	15	402	1600	1974
000041008122568	HWB15	50	State Highway Agency	13	4700	4	6	38.2749	-88.7400	17	2	2389.5	N	9	402	1600	1974
000041008222574	HWB15	50	State Highway Agency	15	4700	4	6	38.2751	-88.7400	17	2	2389.5	N	9	402	1600	1974
000041008322575	HWB15	45	State Highway Agency	15	4700	4	7	38.2739	-88.7325	16	3	2150.55	N	8	402	1600	1974
000041008422576	HWB15	45	State Highway Agency	12	4700	4	6	38.2739	-88.7327	18	3	2150.55	N	8	402	1600	1974
000041008522577	HWB17	40	State Highway Agency	12	11750	4	7	38.3805	-89.1133	20	2	1182.8	5	0	502	1600	1974
000041008622579	HWB17	40	State Highway Agency	12	11750	4	7	38.3806	-89.1134	20	2	1182.8	5	0	502	1600	1974
000041008726606	HWB15	66	State Highway Agency	12	6350	4	7	38.2735	-88.8896	17	4	3154.14	5	20	402	1600	1972
000041008826607	HWB15	66	State Highway Agency	12	6350	4	7	38.2736	-88.8898	17	4	3154.14	5	20	402	1600	1972
000041008926608	HWB15	101	State Highway Agency	13	6350	4	7	38.2742	-88.8970	26	5	4826.79	5	6	402	1600	1972
000041009026609	HWB15	101	State Highway Agency	13	6350	4	6	38.2742	-88.8972	26	5	4826.79	5	6	402	1600	1972
000041009603617	HWB17	197	State Highway Agency	10	2400	4	7	38.2140	-89.0004	24	8	5825.29	5	0	502	1600	1980
000041009717028	HWB12	42	State Highway Agency	10	3400	4	7	38.2472	-88.9007	13	3	1459.92	5	0	302	1600	1985
000041009813827	HWB10	30	City Highway Agency	10	3750	4	7	38.3328	-88.8473	11	3	1134	5	0	201	1600	1986
000041009919540	HWB10	37	State Highway Agency	10	2700	4	7	38.2170	-88.7104	12	3	1398.6	5	30	201	1600	1987
000041010130228	HWB16	83	City Highway Agency	11	7500	4	8	38.3187	-88.8852	22	5	4106.01	5	30	402	1600	1995
000041010230249	HWB26	12	State Highway Agency	11	4050	4	8	38.3428	-88.7270	11	1	268.92	N	2	101	1600	1995
000041010330338	HWB16	42	State Highway Agency	10	2550	4	7	38.3074	-89.0873	16	3	2077.74	8	0	402	1600	1996
000041010433014	HWB16	71	State Highway Agency	11	5200	4	8	38.3103	-89.0009	25	3	3512.37	6	0	402	1600	2003
000041010533714	HWB16	35	State Highway Agency	12	3400	4	8	38.2494	-88.9004	17	2	1731.45	6	0	402	1600	2002
000041200009669	HWB28	20	State Highway Agency	0	7500	4	N	38.3176	-88.8901	5	4	616.6	8	12	119	1600	1961
000041200109672	HWB26	13	State Highway Agency	0	4800	4	N	38.3220	-88.8370	4	3	291.33	8	30	119	1600	1958
000041200209676	HWB28	22	State Highway Agency	0	7400	4	N	38.3182	-88.8900	5	4	678.26	8	25	119	1600	1958
000041200309686	HWB26	9	State Highway Agency	12	5300	4	N	38.2954	-88.8834	3	3	201.69	8	0	119	1600	1909
000041200422580	HWB26	11	State Highway Agency	0	23000	4	N	38.3459	-88.9769	3	3	246.51	8	11	119	1600	1974
000041200522581	HWB26	10	State Highway Agency	0	12700	4	N	38.2765	-88.7581	3	3	224.1	8	0	119	1600	1974
000041200722585	HWB26	10	State Highway Agency	0	23500	4	N	38.3697	-89.0936	3	3	224.1	8	20	119	1600	1974
000041200800293	HWB26	8	State Highway Agency	0	14450	4	N	38.2238	-88.9062	3	3	179.28	8	20	119	1600	1967
000041200905806	HWB26	11	State Highway Agency	0	12900	4	N	38.2710	-88.9210	4	3	246.51	8	20	119	1600	1968
000041201100378	HWB26	6	State Highway Agency	0	2150	4	N	38.1737	-89.0402	3	2	134.46	8	0	119	1600	1933
000041201222586	HWB26	11	State Highway Agency	0	23000	4	N	38.3584	-89.0034	4	3	246.51	8	30	119	1600	1974
000041201322588	HWB26	6	State Highway Agency	0	12700	4	N	38.2766	-88.7698	3	2	134.46	8	0	119	1600	1974
000041201429433	HWB26	9	State Highway Agency	0	4050	4	N	38.3429	-88.7338	4	2	201.69	8	45	119	1600	1993
000041201531320	HWB26	8	State Highway Agency	0	37600	4	N	38.3243	-88.9555	4	2	179.28	8	37	119	1600	1967
000041201631856	HWB26	9	State Highway Agency	0	5900	4	N	38.3423	-88.9172	9	1	201.69	8	15	119	1600	2005
000041301209710	HWB26	18	County Highway Agency	6	350	4	6	38.1487	-88.8452	8	3	403.38	8	15	122	1600	1957
000041301609714	HWB26	9	County Highway Agency	11	2200	4	5	38.3706	-88.9959	8	1	201.69	8	30	122	1600	1959
000041302109720	HWB26	12	County Highway Agency	8	500	4	7	38.2128	-89.1380	5	2	268.92	8	10	122	1600	1956
000041302209721	HWB28	40	Railroad	6	175	4	7	38.1939	-89.0953	7	7	1233.2	N	0	702	1600	1960
000041302709728	HWB28	31	Railroad	4	75	4	4	38.4237	-88.7185	6	7	955.73	N	0	702	1600	1960
000041302909730	HWB26	7	Town Highway Agency	6	225	4	5	38.3802	-88.7666	7	1	156.87	8	0	122	1600	1909
000041303109732	HWB15	27	County Highway Agency	7	400	4	5	38.4574	-88.7929	10	3	1290.33	5	0	402	1600	1947
000041303809739	HWB26	9	Town Highway Agency	5	175	4	5	38.4173	-88.9828	7	1	201.69	8	0	122	1600	1909

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
000041303909741	HWB26	17	County Highway Agency	8	175	4	7	38.1811	-88.9489	7	2	380.97	8	0	122	1600	1967
000041304009742	HWB28	60	County Highway Agency	8	450	4	7	38.1986	-88.9322	9	6	1849.8	8	0	122	1600	1968
000041304109743	HWB28	64	County Highway Agency	8	450	4	7	38.1986	-88.9248	10	6	1973.12	8	0	122	1600	1968
000041304606911	HWB28	45	Town Highway Agency	6	150	4	5	38.1260	-88.8875	8	5	1387.35	8	0	122	1600	1970
000041304809751	HWB28	28	County Highway Agency	6	75	4	7	38.1370	-89.0073	9	3	863.24	8	15	122	1600	1968
000041304909752	HWB26	11	Town Highway Agency	6	100	4	7	38.2277	-89.1333	10	1	246.51	8	0	122	1600	1960
000041305209755	HWB26	7	Town Highway Agency	6	950	4	6	38.2775	-88.8691	7	1	156.87	8	0	122	1960	1909
000041305309756	HWB12	23	Town Highway Agency	5	700	4	4	38.2530	-88.8697	15	3	799.48	8	45	302	1600	1909
000041305809761	HWB26	10	County Highway Agency	6	100	4	7	38.2569	-89.0585	9	1	224.1	8	0	100	1600	1909
000041305909762	HWB28	27	Town Highway Agency	6	800	4	7	38.3068	-88.8509	8	3	832.41	8	0	122	1942	1909
000041306109764	HWB26	8	Railroad	6	225	4	8	38.2527	-88.9860	7	1	179.28	8	37	702	1600	1909
000041306409768	HWB24	15	Town Highway Agency	5	25	4	3	38.3537	-89.1409	14	1	327.45	8	0	302	1968	1909
000041306509769	HWB24	7	Town Highway Agency	5	25	4	5	38.4645	-88.8571	6	1	152.81	8	30	302	1600	1909
000041307209778	HWB26	8	Town Highway Agency	6	25	4	7	38.4208	-89.1355	8	1	179.28	8	0	122	1600	1961
000041307309780	HWB24	14	Town Highway Agency	6	150	4	4	38.4238	-88.7561	7	3	305.62	8	0	302	1965	1909
000041307809787	HWB24	9	Town Highway Agency	5	325	4	3	38.4028	-88.8959	8	1	196.47	8	0	302	1966	1909
000041308109790	HWB24	9	Town Highway Agency	5	125	4	5	38.3949	-89.0119	8	1	196.47	8	0	302	1961	1909
000041309009801	HWB24	17	Town Highway Agency	5	225	4	6	38.3703	-88.9054	8	3	371.11	8	0	302	1600	1957
000041309109802	HWB26	16	Town Highway Agency	5	300	4	6	38.3692	-88.8978	7	2	358.56	8	0	122	1600	1909
000041311509828	HWB24	15	Town Highway Agency	5	75	4	6	38.2570	-89.0439	14	1	327.45	8	0	302	1600	1952
000041312109835	HWB26	7	Town Highway Agency	6	125	4	7	38.4628	-88.8478	7	1	156.87	8	0	122	1600	1958
000041312509839	HWB26	7	Town Highway Agency	6	375	4	7	38.3571	-88.8353	7	1	156.87	8	0	122	1600	1909
000041313809852	HWB24	9	Town Highway Agency	4	10	4	4	38.2091	-88.7079	8	1	196.47	8	0	302	1600	1909
000041313909853	HWB24	7	Town Highway Agency	5	25	4	5	38.2947	-88.7674	7	1	152.81	8	15	302	1600	1909
000041314209856	HWB24	8	Town Highway Agency	5	50	4	7	38.2380	-88.7585	7	1	174.64	8	0	302	1600	1909
000041314309857	HWB26	10	Town Highway Agency	5	125	4	6	38.3709	-88.7561	9	1	224.1	8	0	100	1600	1909
000041316006474	HWB26	10	County Highway Agency	9	1500	4	7	38.3405	-88.7472	10	1	224.1	8	0	122	1600	1974
000041316224083	HWB28	26	County Highway Agency	9	1750	4	8	38.3783	-89.0227	9	3	801.58	8	0	122	1600	1976
000041316424078	HWB28	45	County Highway Agency	9	1750	4	7	38.3787	-89.0326	9	5	1387.35	8	0	122	1600	1976
000041317015349	HWB17	67	County Highway Agency	7	275	4	7	38.2986	-89.0768	16	4	1981.19	8	25	505	1600	1977
000041317124872	HWB26	15	County Highway Agency	9	275	4	7	38.2031	-89.0955	14	1	336.15	8	30	505	1600	1978
000041317606481	HWB24	7	County Highway Agency	7	125	4	7	38.1832	-89.1160	7	1	152.81	8	0	302	1600	1973
000041317906307	HWB24	8	Town Highway Agency	4	125	4	3	38.2989	-88.7724	8	1	174.64	8	25	302	1600	1948
000041320027837	HWB28	20	County Highway Agency	9	1450	4	8	38.4397	-88.9977	6	3	616.6	8	0	122	1600	1979
000041320624084	HWB28	27	County Highway Agency	9	1300	4	6	38.4395	-88.8993	9	3	832.41	8	0	122	1600	1974
000041361215366	HWB24	7	Town Highway Agency	6	175	4	7	38.4257	-88.9918	6	1	152.81	8	0	302	1600	1977
000041361727838	HWB26	11	Town Highway Agency	8	325	4	8	38.3732	-88.8432	10	1	246.51	7	0	122	1600	1979
000041361805677	HWB17	36	County Highway Agency	8	850	4	7	38.3929	-89.0138	11	3	1064.52	8	30	505	1600	1981
000041362012137	HWB26	18	County Highway Agency	8	1000	4	8	38.3743	-88.7932	18	1	403.38	8	15	505	1600	1984
000041362127100	HWB12	21	Town Highway Agency	6	125	4	7	38.2650	-89.0058	21	1	729.96	8	0	302	1600	1977
000041362215404	HWB17	33	County Highway Agency	8	1250	4	7	38.2475	-88.7403	12	3	975.81	8	0	505	1600	1986
000041362302478	HWB12	35	Town Highway Agency	7	50	4	7	38.3680	-88.7244	33	1	1216.6	8	30	302	1600	1982
000041362420540	HWB17	24	County Highway Agency	8	650	4	8	38.4315	-88.7931	14	2	709.68	8	0	505	1600	1987
000041362621143	HWB17	27	County Highway Agency	8	650	4	8	38.2703	-89.1050	11	3	798.39	8	30	505	1600	1987
000041362819492	HWB26	18	County Highway Agency	8	350	4	8	38.1993	-88.7408	9	3	403.38	8	30	122	1600	1987
000041362902488	HWB17	20	Town Highway Agency	7	150	4	7	38.2052	-89.1459	19	1	591.4	8	30	505	1600	1982
000041363012621	HWB26	18	County Highway Agency	8	2200	4	8	38.3559	-88.9687	17	1	403.38	8	0	505	1600	1988
000041363102466	HWB17	40	Town Highway Agency	7	125	4	8	38.2576	-88.7502	14	3	1182.8	8	30	505	1600	1983
000041363226199	HWB26	15	County Highway Agency	8	275	4	8	38.1633	-88.8630	14	1	336.15	8	0	505	1600	1990
000041363429434	HWB19	20	County Highway Agency	8	950	4	8	38.2756	-89.0405	19	1	593.6	8	0	505	1600	1992
000041363512115	HWB26	18	Town Highway Agency	7	50	4	8	38.3942	-89.1188	17	1	403.38	8	0	505	1600	1984
000041363629886	HWB26	18	County Highway Agency	8	400	4	8	38.2203	-88.7407	17	1	403.38	9	15	505	1600	1993
000041363712080	HWB26	12	Town Highway Agency	7	350	4	8	38.2673	-88.9136	11	1	268.92	8	0	505	1600	1984
000041363830329	HWB19	55	County Highway Agency	8	400	4	8	38.4460	-88.7833	18	3	1632.4	7	30	505	1600	1994
000041363908357	HWB17	46	Town Highway Agency	8	450	4	8	38.3810	-88.9083	14	3	1360.22	7	0	505	1600	1985

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
000041364030499	HWB19	49	County Highway Agency	8	125	4	8	38.3524	-89.1273	18	3	1454.32	8	0	505	1600	1997
000041364111069	HWB17	28	Town Highway Agency	7	75	4	8	38.3197	-88.9977	11	3	827.96	7	0	505	1600	1985
000041364230735	HWB26	19	County Highway Agency	8	550	4	8	38.4508	-89.0475	18	1	425.79	8	5	505	1600	1995
000041364315833	HWB26	7	Town Highway Agency	6	50	4	7	38.2008	-88.7225	6	1	156.87	8	0	122	1984	1962
000041364831887	HWB19	27	County Highway Agency	8	400	4	9	38.1667	-88.8151	12	3	801.36	8	0	505	1600	1998
000041364921146	HWB26	18	Town Highway Agency	7	275	4	8	38.2581	-88.8572	17	1	403.38	8	15	505	1600	1987
000041365107886	HWB17	27	Town Highway Agency	7	150	4	8	38.3371	-89.0042	11	3	798.39	7	0	505	1600	1988
000041365233176	HWB19	22	County Highway Agency	8	200	4	8	38.1986	-88.7243	9	2	652.96	8	30	505	1600	2001
000041365320542	HWB26	15	Town Highway Agency	7	75	4	8	38.2179	-88.8107	14	1	336.15	8	15	505	1600	1987
000041365433865	HWB19	20	County Highway Agency	8	1100	4	8	38.4378	-89.0616	20	1	593.6	8	0	505	1600	2000
000041365507892	HWB26	18	Town Highway Agency	7	275	4	8	38.2127	-88.8698	17	1	403.38	8	15	505	1600	1988
000041365634649	HWB26	18	County Highway Agency	8	100	4	9	38.1373	-89.1274	18	1	403.38	8	0	505	1600	2002
000041365836343	HWB19	32	County Highway Agency	8	850	4	8	38.2541	-89.0404	10	3	949.76	8	0	505	1600	2004
000041366036345	HWB17	23	County Highway Agency	8	250	4	8	38.2745	-89.0771	22	1	680.11	8	30	505	2004	1600
000041366119064	HWB26	15	Town Highway Agency	7	250	4	8	38.3170	-88.7982	14	1	336.15	8	15	505	1600	1989
000041366233913	HWB26	7	County Highway Agency	0	300	4	N	38.2871	-89.1161	7	1	156.87	8	13	107	1600	2006
000041366320280	HWB17	23	Town Highway Agency	7	150	4	7	38.3443	-88.9787	7	3	680.11	8	30	505	1600	1989
000041366929438	HWB26	15	Town Highway Agency	7	50	4	8	38.4595	-88.9931	14	1	336.15	8	0	505	1600	1993
000041367529439	HWB19	26	Town Highway Agency	7	275	4	8	38.2637	-88.8527	10	3	771.68	8	0	505	1600	1993
000041367729440	HWB26	19	Town Highway Agency	7	50	4	8	38.2833	-88.7567	18	1	425.79	8	20	505	1600	1993
000041367930391	HWB19	49	Town Highway Agency	8	1700	4	8	38.3317	-88.8983	18	3	1454.32	8	0	502	1600	1995
000041368130579	HWB26	8	Town Highway Agency	6	10	4	5	38.2207	-88.7431	8	1	179.28	7	0	122	1600	1993
000041368331415	HWB19	23	Town Highway Agency	7	75	4	9	38.1611	-89.0956	7	3	682.64	8	5	505	1600	1998
000041368731797	HWB26	9	Town Highway Agency	8	50	4	7	38.3622	-88.8453	8	1	201.69	8	0	122	1600	1995
000041368931888	HWB26	18	Town Highway Agency	7	75	4	8	38.2650	-88.7531	18	1	403.38	8	20	505	1600	1997
000041369132304	HWB19	20	Town Highway Agency	7	150	4	9	38.1446	-88.8340	20	1	593.6	8	0	505	1600	1999
000041369332763	HWB26	12	Town Highway Agency	7	225	4	8	38.3197	-88.8310	12	1	268.92	8	0	505	1600	1999
000041369533414	HWB19	23	Town Highway Agency	7	100	4	8	38.4017	-88.7277	22	1	682.64	8	0	505	1600	2000
000041369733155	HWB26	15	Town Highway Agency	7	75	4	8	38.4326	-88.9851	15	1	336.15	6	0	505	1600	2000
000041370534155	HWB19	22	Town Highway Agency	7	275	4	8	38.2019	-88.8701	21	1	652.96	8	15	505	1600	2000
000041370734251	HWB26	15	Town Highway Agency	7	100	4	9	38.2723	-88.7595	15	1	336.15	8	0	505	1600	2001
000041371134711	HWB19	21	Town Highway Agency	7	100	4	8	38.3871	-89.0199	21	1	623.28	8	15	505	1600	2001
000041371335762	HWB26	15	Town Highway Agency	7	50	4	9	38.4290	-88.9657	14	1	336.15	8	0	505	1600	2002
000041371735783	HWB26	12	Town Highway Agency	7	75	4	9	38.2020	-89.0225	12	1	268.92	8	0	505	1600	2003
000041371935995	HWB19	34	County Highway Agency	8	100	4	8	38.1340	-89.1370	12	3	1009.12	8	0	505	1600	2003
000041372132959	HWB19	21	Town Highway Agency	7	50	4	9	38.4636	-88.8296	21	1	623.28	8	0	505	1600	2002
000041372336538	HWB19	30	Town Highway Agency	7	125	4	8	38.1496	-89.1135	15	1	890.4	8	0	505	1600	2004
000041372734056	HWB26	15	Town Highway Agency	7	100	4	8	38.1798	-89.0226	15	1	336.15	8	0	505	1600	2005
000041372934113	HWB26	12	Town Highway Agency	7	150	4	8	38.1398	-88.8340	12	1	268.92	8	0	505	1600	2005
000041373134164	HWB26	12	Town Highway Agency	7	100	4	9	38.2022	-89.0966	11	1	268.92	8	30	500	1600	2005
000041373334552	HWB19	24	Town Highway Agency	7	609	4	8	38.3517	-88.9024	24	1	712.32	6	0	502	1600	2005
000041373541656	HWB19	55	Town Highway Agency	7	125	4	9	38.3280	-89.1067	18	3	1632.4	6	10	505	1600	2006
000041500009779	HWB26	11	Town Highway Agency	0	150	4	N	38.4238	-88.7579	3	3	246.51	8	0	319	1600	1909
000041500124086	HWB26	7	County Highway Agency	0	1300	4	N	38.4382	-88.8862	3	2	156.87	8	0	119	1600	1974
000041500210524	HWB26	9	Town Highway Agency	0	325	4	N	38.1840	-88.9021	4	2	201.69	8	35	119	1600	1975
000041500310523	HWB26	6	County Highway Agency	0	1750	4	N	38.3791	-89.0271	3	2	134.46	8	0	119	1600	1976
000041500915638	HWB26	8	Town Highway Agency	0	75	4	N	38.3838	-89.1120	3	2	179.28	8	0	119	1600	1981
000041501015654	HWB26	12	County Highway Agency	0	1100	4	N	38.4383	-89.0847	3	3	268.92	8	40	119	1600	1982
000041501212775	HWB26	9	County Highway Agency	11	750	4	N	38.2223	-89.0401	4	2	201.69	8	45	119	1600	1982
000041501308379	HWB26	8	County Highway Agency	0	1100	4	N	38.4340	-89.0940	3	3	179.28	8	0	119	1600	1985
000041501701672	HWB26	7	Town Highway Agency	0	50	4	N	38.1334	-88.7206	2	3	156.87	8	13	119	1600	1984
000041502117655	HWB26	11	Town Highway Agency	0	275	4	N	38.4101	-88.9958	3	3	246.51	8	30	119	1600	1986
000041502220546	HWB26	8	County Highway Agency	0	1000	4	N	38.3604	-88.7933	4	2	179.28	8	25	119	1600	1987
000041502320547	HWB26	7	Town Highway Agency	0	50	4	N	38.4163	-88.7198	2	3	156.87	8	0	119	1600	1987
000041502429354	HWB26	7	County Highway Agency	0	1250	4	N	38.2432	-88.7404	3	2	156.87	8	26	119	1600	1990

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
000041502631123	HWB26	10	County Highway Agency	9	400	4	N	38.1634	-88.8152	3	3	224.1	9	0	119	1600	1995
000041502707893	HWB26	7	Town Highway Agency	0	125	4	N	38.2571	-88.7244	2	3	156.87	8	0	119	1600	1988
000041502910241	HWB26	7	Town Highway Agency	0	100	4	N	38.1842	-88.7249	3	2	156.87	8	10	119	1600	1988
000041503126515	HWB26	11	Town Highway Agency	0	275	4	N	38.4100	-88.9927	3	3	246.51	8	31	119	1600	1990
000041503319755	HWB26	11	Town Highway Agency	0	325	4	N	38.4028	-88.8976	2	4	246.51	8	30	119	1600	1989
000041503420288	HWB26	12	County Highway Agency	0	1450	4	N	38.4401	-88.9801	3	3	268.92	8	45	119	1600	1989
000041503519073	HWB26	7	Town Highway Agency	0	50	4	N	38.2227	-88.7591	3	2	156.87	8	10	119	1600	1988
000041503729441	HWB26	7	Town Highway Agency	0	250	4	N	38.3626	-88.8176	3	2	156.87	8	18	119	1600	1992
000041503929442	HWB26	7	Town Highway Agency	0	250	4	N	38.3553	-88.8228	3	2	156.87	8	18	119	1600	1992
000041504130170	HWB26	12	Town Highway Agency	0	175	4	N	38.3793	-88.9858	5	2	268.92	8	57	119	1600	1992
000041504329443	HWB26	10	Town Highway Agency	0	500	4	N	38.2795	-88.7426	3	3	224.1	8	0	119	1600	1994
000041504529444	HWB26	9	Town Highway Agency	0	100	4	N	38.2576	-88.7824	2	3	201.69	8	0	119	1600	1996
000041504729445	HWB26	8	Town Highway Agency	0	225	4	N	38.1486	-88.8710	2	3	179.28	8	0	119	1600	1994
000041504929446	HWB26	7	Town Highway Agency	0	450	4	N	38.3556	-88.9651	3	2	156.87	8	0	119	1600	1996
000041505129447	HWB26	8	Town Highway Agency	0	275	4	N	38.2328	-88.9864	2	3	179.28	8	0	119	1600	1992
000041505330034	HWB26	7	Town Highway Agency	0	225	4	N	38.2985	-88.8135	3	2	156.87	8	5	119	1600	1994
000041505530290	HWB26	11	Town Highway Agency	0	100	4	N	38.2789	-88.7141	11	1	246.51	8	0	119	1600	2004
000041506130293	HWB26	7	Town Highway Agency	0	550	4	N	38.3691	-88.9454	3	2	156.87	8	3	119	1600	1998
000041506330294	HWB26	7	Town Highway Agency	0	125	4	N	38.1970	-89.0862	3	2	156.87	8	0	119	1600	1994
000041507132305	HWB26	8	Town Highway Agency	0	100	4	N	38.2723	-88.7625	8	1	179.28	8	19	119	1600	1999
000041600110126	HWB26	11	Town Highway Agency	0	4950	4	N	38.3195	-88.9700	3	3	246.51	8	0	119	1600	1980
000041600229448	HWB26	7	City Highway Agency	12	4000	4	N	38.3079	-88.9242	3	2	156.87	8	55	119	1600	1988
000041990609775	HWB28	30	Railroad	4	25	4	6	38.4338	-88.7178	6	7	924.9	N	0	702	1600	1960
000041990809786	HWB28	31	Railroad	6	50	4	7	38.4053	-88.7207	6	5	955.73	N	0	702	1600	1960
000041990909796	HWB28	33	Railroad	6	450	4	7	38.3810	-88.9179	7	5	1017.39	N	0	702	1950	1909
000041991009799	HWB28	35	Railroad	5	25	4	4	38.3837	-88.7231	6	7	1079.05	N	0	702	1600	1963
000041991309804	HWB28	31	Railroad	5	75	4	7	38.3579	-88.7255	6	7	955.73	N	0	702	1600	1963
000041991409807	HWB28	55	Railroad	5	10	4	5	38.3436	-89.0654	15	1	1695.65	N	25	310	1600	1950
000041991909859	HWB28	35	Railroad	5	25	4	5	38.1696	-88.7445	6	6	1079.05	N	0	702	1600	1950
000041992305890	HWB28	30	Railroad	5	125	4	3	38.2328	-88.7386	6	7	924.9	N	0	702	1600	1950
000041992405892	HWB28	30	Railroad	6	50	4	0	38.2303	-88.7385	6	7	924.9	N	0	702	1600	1950
000041992505926	HWB28	39	Railroad	5	25	4	5	38.2280	-88.7386	6	8	1202.37	N	0	702	1600	1950
000041992606011	HWB28	41	Railroad	7	650	4	5	38.3320	-88.7276	14	1	1264.03	N	0	300	1600	1922
000041992730267	HWB19	53	Town Highway Agency	7	609	4	7	38.3518	-88.9069	23	3	1573.04	N	0	505	1600	1994
000061002714663	HWB17	70	State Highway Agency	10	500	4	7	38.4759	-88.9598	21	4	2069.9	N	2	502	1600	1966
000061501613081	HWB26	8	Town Highway Agency	0	275	4	N	38.4740	-89.1319	4	2	179.28	8	20	119	1600	1982
000041000709650	HWB15	72	Other Federal Agencies	0	6450	4		38.2724	-88.9312	39	0	3440.88		0	407	1600	1968
000041000809651	HWB15	78	Other Federal Agencies	0	3450	4		38.2839	-88.9394	24	0	3727.62		0	402	1600	1968
000041000909652	HWB15	78	Other Federal Agencies	0	3450	4		38.2837	-88.9399	24	0	3727.62		0	402	1600	1968
000041001409657	HWB15	46	Other Federal Agencies	0	2250	4		38.4400	-88.9523	12	0	2198.34		0	402	1600	1968
000041001509658	HWB15	46	Other Federal Agencies	0	2250	4		38.4400	-88.9526	12	0	2198.34		0	402	1600	1968
000041002509668	HWB15	100	Other Federal Agencies	0	37600	4		38.3127	-88.9519	36	0	4779		0	402	1600	1968
000041005109716	HWB15	77	Other Federal Agencies	0	18100	4		38.3421	-88.9539	23	0	3679.83		0	402	1600	1968
000041005309740	HWB15	81	Other Federal Agencies	0	18100	4		38.3735	-88.9499	24	0	3870.99		0	402	1600	1967
000041005409744	HWB15	68	Other Federal Agencies	0	28900	4		38.2055	-88.9111	20	0	3249.72		0	402	1600	1964
000041005509765	HWB15	68	Other Federal Agencies	0	28900	4		38.1547	-88.9137	20	0	3249.72		0	402	1600	1965
000041005609773	HWB17	72	Other Federal Agencies	0	21000	4		38.4475	-88.9549	21	0	2129.04		0	502	1600	1967
000041005709781	HWB17	69	Other Federal Agencies	0	18100	4		38.4178	-88.9501	21	0	2040.33		0	502	1600	1967
000041005809831	HWB15	79	Other Federal Agencies	0	28900	4		38.2584	-88.9225	23	0	3775.41		0	402	1600	1965
000041005925738	HWB15	95	Other Federal Agencies	0	14450	4		38.2711	-88.9343	33	0	4540.05		0	402	1600	1968
000041006022553	HWB15	68	Other Federal Agencies	0	9050	4		38.3348	-88.9545	31	0	3249.72		0	402	1600	1968
000041006122554	HWB15	104	Other Federal Agencies	0	11500	4		38.3334	-88.9572	36	0	4970.16		0	402	1600	1968
000041006225741	HWB15	81	Other Federal Agencies	0	12700	4		38.2720	-88.8585	30	0	3870.99		0	402	1600	1971
000041006325742	HWB15	72	Other Federal Agencies	0	12700	4		38.2741	-88.8321	27	0	3440.88		0	402	1600	1971
000041006425743	HWB15	74	Other Federal Agencies	0	23500	4		38.3855	-89.1271	28	0	3536.46		0	402	1600	1972

Highway Bridges

Bridge Name	Analysis Class	Bridge Length (m)	Bridge Owner	Bridge Width (m)	Daily Traffic (cars/day)	Flood Structure Foundation Type	General Condition Rating	Latitude	Longitude	Maximum Span Length (m)	Number of Spans	Replacement Cost ($1,000)	Scour Index	Skew Angle (degrees)	Structure Type	Year Bridge Was Remodeled	Year Built (Between 1500 and 2100)
000041006525744	HWB15	75	Other Federal Agencies	0	9400	4		38.2719	-88.7116	27	0	3584.25		0	402	1600	1971
000041006626603	HWB15	72	Other Federal Agencies	0	12700	4		38.2702	-88.8694	27	0	3440.88		0	402	1600	1971
000041006726604	HWB15	58	Other Federal Agencies	0	6300	4		38.2740	-88.9008	19	0	2771.82		0	402	1600	1972
000041006826605	HWB15	60	Other Federal Agencies	0	6300	4		38.2739	-88.9007	19	0	2867.4		0	402	1600	1972
000041006922555	HWB15	75	Other Federal Agencies	0	23000	4		38.3620	-89.0347	27	0	3584.25		0	402	1600	1974
000041007222560	HWB15	71	Other Federal Agencies	0	12700	4		38.2754	-88.7862	27	0	3393.09		0	402	1600	1972
000041007722564	HWB15	78	Other Federal Agencies	0	250	4		38.3619	-89.0713	23	0	3727.62		0	402	1600	1974
000041007822565	HWB15	78	Other Federal Agencies	0	250	4		38.3621	-89.0713	23	0	3727.62		0	402	1600	1974
000041007922566	HWB15	73	Other Federal Agencies	0	23000	4		38.3536	-88.9923	30	0	3488.67		0	402	1600	1974
000041008022567	HWB15	75	Other Federal Agencies	0	23000	4		38.3426	-88.9694	31	0	3584.25		0	402	1600	1974
000041008122568	HWB15	50	Other Federal Agencies	0	900	4		38.2749	-88.7400	17	0	2389.5		0	402	1600	1974
000041008222574	HWB15	50	Other Federal Agencies	0	900	4		38.2751	-88.7400	17	0	2389.5		0	402	1600	1974
000041600003651	HWB28	36	Other Federal Agencies	0	11850	4		38.3163	-88.9127	34	0	1109.88		0	400	1600	1980
000041990024021	HWB12	37	Other Federal Agencies	0	2300	4		38.1904	-89.0401	13	0	1286.12		0	302	1600	1900
000041990124024	HWB12	25	Other Federal Agencies	0	300	4		38.4458	-88.7164	9	0	869		0	302	1600	1900
000041990224025	HWB12	34	Other Federal Agencies	0	175	4		38.1565	-88.7457	8	0	1181.84		0	302	1600	1900
000041990324026	HWB12	26	Other Federal Agencies	0	450	4		38.2794	-88.7335	9	0	903.76		0	302	1600	1979
000041990424027	HWB12	25	Other Federal Agencies	0	350	4		38.2024	-88.7411	9	0	869		0	302	1600	1900
000041990509727	HWB24	18	Other Federal Agencies	0	150	4		38.3882	-88.9254	18	0	392.94		0	302	1600	1900
000041990724028	HWB12	31	Other Federal Agencies	0	50	4		38.4163	-88.7195	7	0	1077.56		0	302	1600	1900
000041991124029	HWB12	50	Other Federal Agencies	0	25	4		38.3728	-88.7240	9	0	1738		0	302	1600	1900
000041991224030	HWB12	22	Other Federal Agencies	0	550	4		38.3662	-88.9095	4	0	764.72		0	302	1600	1900
000041991624032	HWB12	26	Other Federal Agencies	0	175	4		38.2574	-88.7355	9	0	903.76		0	302	1600	1900
000041991724033	HWB12	26	Other Federal Agencies	0	50	4		38.1950	-88.7417	9	0	903.76		0	302	1600	1900
000041991824034	HWB12	22	Other Federal Agencies	0	75	4		38.1842	-88.7427	6	0	764.72		0	302	1600	1900
000041992009862	HWB12	88	Other Federal Agencies	0	50	4		38.3679	-88.7243	24	0	3058.88		0	302	1600	1900
000061002714663	HWB17	70	Other Federal Agencies	0	21000	4		38.4759	-88.9598	21	0	2069.9		0	502	1600	1966

Appendix G – Map of Critical Facilities

Appendix H – Top ten flood flows form the USGS Stream Gauge Data

County	Jefferson County		Jefferson County		Jefferson County	
Station	Waltonville, IL		Mt. Vernon, IL		Mt. Vernon, IL	
River	Rayse Creek		Seven Mile Creek		Casey fork	
Period of Record	1980-2007		1961-1982		1986-2007	
Latitude	38.2539		38.3189		38.2864	
Longitude	89.0406		88.8472		88.8714	
Rank	**Year**	**Discharge (cfs)**	**Year**	**Discharge (cfs)**	**Year**	**Discharge (cfs)**
1	1994	21,200	1961	2,530	1990	16,100
2	1995	20,800	1975	2,190	1995	14,100
3	1996	17,400	1979	2,030	1994	13,300
4	1990	16,400	1977	1,860	1996	10,300
5	1986	15,600	1978	1,690	2006	9,970
6	2006	13,700	1982	1,510	1986	6,560
7	1999	10,600	1968	1,400	1989	5,970
8	1983	10,300	1973	1,130	1999	4,780
9	1989	9,330	1980	1,100	2000	4,780
10	1993	8,390	1969	1,020	1993	4,650

County	Jefferson County		Jackson County		Franklin County	
Station	Marlow, IL		Murphysboro, IL		Plumfield, IL	
River	White Feather Creek		Big Muddy River		Big Muddy River	
Period of Record	1956-1980		1916-2007		1971-2007	
Latitude	38.3444		37.7481		37.9014	
Longitude	88.7806		89.3467		89.0139	
Rank	**Year**	**Discharge (cfs)**	**Year**	**Discharge (cfs)**	**Year**	**Discharge (cfs)**
1	1975	323	1996	33,800	1983	1,515
2	1961	271	1961	33,300	1985	1,278
3	1969	223	1983	32,100	2002	1,168
4	1970	216	1994	29,600	1979	1,141
5	1958	214	1916	28,000	1994	1,124
6	1964	209	1949	28,000	1973	1,045
7	1957	201	1950	27,000	1975	1,031
8	1968	194	1937	25,100	1984	1,023
9	1962	192	1935	25,000	1989	974.9
10	1973	179	1979	24,600	1974	923.4