

# **Jasper County Multijurisdictional Natural Hazards Mitigation Plan**

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Jasper County Hazard Mitigation Planning Committee

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**Jasper County Multi-jurisdictional Natural Hazards Mitigation Plan**  
**MISSION STATEMENT**

The mission of the Jasper County Hazard Mitigation Planning Committee is to reduce and when possible prevent the impact of natural hazards on residents, businesses, infrastructure, critical facilities, and private property by means of mitigation measures and activities.

## Introduction

### Narrative

Hazard mitigation is action taken to reduce or possibly even eliminate risks to human safety and property that are associated with natural disasters. The importance of natural hazard mitigation became very clear when severe flooding struck Jasper County in June 2008. The flood event resulted in Jasper County becoming part of the federal disaster declaration #1771. As the importance of natural hazard mitigation has become well known to more communities, there has also become more financial support from Federal grant funding. With the implementation of this plan, Jasper County hopes to begin applying for Federal grant opportunities for natural hazard mitigation activities.

### Jurisdiction Participation

In order for Jasper County municipalities to be included in the Hazard Mitigation Plan, a prerequisite of National Flood Insurance Program (NFIP) compliance was required. Three jurisdictions in the county are NFIP compliant and each opted to participate in the planning process. Each participating jurisdiction passed a Resolution of Support for the Hazard Mitigation Plan and to Formally Recognize the Hazard Mitigation Planning Committee. The following jurisdictions are represented by the Hazard Mitigation Plan:

<b>Community</b>	<b>Community ID</b>	<b>FEMA Floodplain</b>	<b>NFIP Participant</b>	<b>Plan Adoption Date</b>
Jasper County	170990	Yes	Yes	
City of Newton	170303	Yes	Yes	
Village of Ste. Marie		Yes	Yes	

Jasper County is a small, rural farming community located in east central Illinois. The City of Newton is the most populated incorporated area. Other incorporated areas in the county include Hidalgo, Willow Hill, Ste. Marie, Rose Hill, Wheeler, and Yale. Of the 7 incorporated areas only 2 and the County are included in the Plan as they are participating in the NFIP as required.

<b>Community</b>	<b>Population</b>	<b>Number of Housing Units</b>	<b>Median Household Income</b>	<b>Number of resident age 65 and older</b>
Jasper County	9,530	4,459	\$44,456	1,604
City of Newton	2,889	1,420	\$32,843	553
Village of Ste. Marie	246	132	\$38,542	45

## Planning Committee

At the start of the planning process, a Planning Committee was formed. The Planning Committee included a representative from each participating jurisdiction in Jasper County, Jasper County Sheriff Department, Jasper County Health Department, Jasper County Emergency Management Agency, University of Illinois Extension/Jasper County Co-op group and community members.

Each member of the Planning Committee was expected to come to each planning meeting or give notice of non-attendance. The figure 1 shows representation of the Planning Committee members.

**Figure 1: Meeting Roster**

Name	Affiliation	M1	M2	M3	M4	M5	M6	M7	M8
Benefiel, Phil	Advisory-JCCU #1	X	X	X	X	X	X	X	X
Bolander, Mark	Advisory-Mayor	X	X		X	X	X	X	X
Clark, Joel	EMA-JCHD Director		X	X					
Diel, Ray	Advisory			X					
Francis, Ed	EMA-Sherriff		X	X			X	X	X
Griffith, Dennis	EMA-Sherriff	X							
Hartrich, Bill	Advisory-Ste. Marie						X		X
Huth, Linda	County Clerk	X	X						
Larimore, Ken	Jasper County COOP/Extension	X	X	X	X		X	X	X
Long, Doug	EMA-Director EMA	X	X	X				X	
Mason, Trisha	GIS	X	X	X	X	X	X		
Miller, Leah	Larence County Ext.	X	X	X	X	X	X	X	X
Mitchell, Ed	Jasper County Board-Chairman	X	X	X	X		X	X	X
Ochs, Tammy	Jasper County COOP/Extension	X	X	X		X	X	X	X
Owen, Jared		X							
Riddle, Deborah	EMA-JCHD Director of Nursing	X	X	X		X	X		X
Tarr, Matt	Village of Ste. Marie	X	X	X		X			
Weber, Bill	Jasper County Board - Member	X	X	X		X	X	X	X
Weber, Jim	Jasper County Board - Member	X	X	X	X	X	X	X	
Woods, Paul	Advisory - Tax Assessor	X							
Total in Attendance		16	15	13	8	9	12	10	10

M1	02/08/2010 - Kick Off Meeting
M2	03/15/2010 - Risk Assessment
M3	05/10/2010 - Risk Assessment (2)
M4	07/12/2010 - Risk Assessment (3)
M5	08/09/2010 - Risk Assessment (4)
M6	09/13/2010 - Mitigation Strategy
M7	10/18/2010 - Mitigation Priorities
M8	11/03/2010 - Mitigation Priorities & Plan Maintenance

The Disaster Mitigation Act (DMA) stresses the importance of active participants serving during the development of a mitigation plan. The Jasper County Planning Committee members were actively involved in each aspect of the development of the plan including:

- Regular attendance at the monthly Planning Committee meetings
- Providing statistical and historical information regarding past natural disasters or potential natural hazards
- Aiding in public participation and involvement
- Reviewing draft versions of the Hazard Mitigation Plan
- Adoption of the Hazard Mitigation Plan by each participating jurisdiction

Over 12 months a series of meetings took place to prepared and develop the Plan. Below is a synopsis of each meeting.

- January 14, 2010 FEMA Hazard Mitigation Grant Agreement is accepted and signed by Jasper County
- February 8, 2010 Kick-Off Meeting-Jared Owen from IEMA discusses key points of the Plan and local disaster statistics
- March 15, 2010 Risk Assessment (1) Meeting- Natural hazards to be addressed in the Plan are discussed and identified.
- May 10, 2010 Risk Assessment (2) & Community Asset Inventory Meeting- Citizen surveys were developed to encourage citizen participation. Review of the HAZUS base map for corrections and additions.
- July 12, 2010 Risk Assessment (3)/Loss Estimation Meeting- Flood Hazard Assessment
- August 9, 2010 Risk Assessment (4)/Loss Estimation Meeting- Earthquake Hazard Assessment
- August 27, 2010 Mitigation Goals Meeting with Ste. Marie officials
- September 13, 2010 Hazard Mitigation Strategy Meeting-Mitigation objectives, goals, and activities were identified and discussed
- October 18, 2010 Mitigation Priorities Meeting- Mitigation objectives, goals, and activities were evaluated using the STAPLEE criteria
- November 3, 2010 Plan Maintenance Meeting-draft one of plan was reviewed. Plan progress and coordination meetings were discussed and scheduled.

### **Public Involvement**

Public participation was a challenging factor throughout the entire planning process. Each monthly Planning Committee meeting was widely advertised in 2 local newspapers (The Effingham Daily News and The Newton Press Mentor) and open to the public. However, little

interest was received from the public at the monthly meetings. Additionally, plan updates and news were publicized in the two local papers on a regular basis.

To get feedback and comments from Jasper County residents, a community survey was developed. The survey only took a resident 5 minutes to complete, but was a wealth of information for the Planning Committee. The survey was widely available online at [www.surveymonkey.com](http://www.surveymonkey.com) and at multiple public buildings throughout Jasper County. The survey was delivered to each public building and picked up 3 weeks later.

### **Neighboring Communities Participation**

The neighboring counties of Crawford, Lawrence, Richland, Clay, Effingham, Clark and Cumberland EMA director's were contacted and given a draft copy of Jasper County's Hazard Mitigation Plan. Each neighboring county was invited to a meeting to discuss any comments regarding the plan.

### **Review of Existing Plans**

During the first two meetings the Planning Committee asked each member to consider existing plans and reports that may be of use to the Jasper County Hazard Mitigation Plan. Since there were a wide variety of individuals, municipalities, and service providing agencies, several plans and reports were used and considered throughout the development of this plan.

- Flood Insurance Rate Maps (FIRMs): Jasper County's FIRMs were used in correlation with GIS HAZUS to identify critical facilities, homes, and other structures that are located within a floodplain.
- Illinois State Hazard Mitigation Plan: The State Hazard Mitigation Plan was used as a guide in developing the Jasper County Hazard Mitigation Plan, specifically when identifying local hazards.
- National Flood Insurance Program (NFIP): Jasper County, City of Newton, and Village of St. Marie are all compliant communities in the NFIP which is a prerequisite of being involved in the Jasper County Hazard Mitigation Plan.
- Comprehensive Plan: The City of Newton is currently developing their comprehensive plan which coincides with the development of the Jasper County Hazard Mitigation Plan.
- 100 year and 500 year Flood Maps: The flood maps were incorporated into GIS HAZUS to identify any structures, major road ways and bridges that could be affected by a 100 year and 500 year flood.
- Emergency Operations Plan (EOP): The Jasper County EOP plays a vital role in emergency dispatch during a natural hazard event.

- Zoning Ordinances: The City of Newton and Village of St. Marie both have enforced zoning ordinances which limit building in flood prone areas. Additionally, the City of Newton has adopted the International Building Code which supports proper construction of structures that will withstand various natural hazard even

## **Risk Assessment**

### **Identifying Hazards**

The State of Illinois Natural Hazard Mitigation Plan identifies seven different natural hazards which affect Jasper County. The Jasper County Planning Committee reviewed the seven State identified hazards and discussed other possible hazards that can or have previously affected the region.

Upon review of historical documents, statistics and discussion, the Planning Committee decided to include the following natural hazards in the Jasper County Natural Hazards Mitigation Plan:

- Floods: including flash flooding and dam and levee breaches
- Severe Storms: including hail, high winds, and lightning
- Tornados
- Severe Winter Storms: including snow and ice events
- Drought
- Earthquakes
- Extreme Temperatures: including extreme hot or cold temperatures for extended periods of time
- Other: the other category was developed to include mine subsidence as a natural hazard event

## Drought Hazard

Description According to the Illinois State Climatologist Office, drought is a complex physical and social phenomenon of widespread significance, and despite all the problems droughts have caused, drought has been difficult to define. Unlike other natural hazards, drought is not a distinct event. Droughts occur when there is no significant rainfall for a long period of time. Often a heat wave is combined with a drought.

Determining when a drought has begun or ended is also very difficult to define. In many cases, drought is identified by looking at the impacts such as crop losses, low soil moisture, low water levels in lakes and streams and water shortages.

The timing of a drought is also an important factor. Droughts that occur during the peak growing season can have a significant impact on agriculture. Rural communities that rely on agriculture as an economic tool can face many hardships during a time of drought as a result of crop failure and low crop yields.

The three most common definitions of drought are:

- Climatological Drought-a period when well below average precipitation occurs from a few months to a few years.
- Agricultural Drought-a period when the soil moisture is inadequate to meet the demands for crop growth and sustainability.
- Hydrological Drought-a period when below average stream flow and reservoir storage.

Measuring Droughts The Palmer Drought Severity Index (PDSI), shown in figure 2, is a tool that is used to measure drought according to the level of recorded precipitation compared to the average amount of precipitation for an area. The PDSI can be used to evaluate the scope, severity and frequency of periods of unusual dry or wet weather.

**Figure 2 Palmer Classification System**

+4.0 inches or more	Extremely Wet
3.0 inches to 3.99 inches	Very Wet
2.0 inches to 2.99 inches	Moderately Wet
1.0 inches to 1.99 inches	Slightly Wet
0.5 inches to 0.99 inches	Incipient Wet Spell
0.49 inches to -0.49 inches	Near Normal
-0.5 inches to -0.99 inches	Incipient Dry Spell
-1.9 inches to -1.99 inches	Mild Drought
-2.0 inches to -2.99 inches	Moderate Drought
-3.0 inches to -3.99 inches	Severe Drought
-4.0 inches or less	Extreme Drought

**Figure 3 Normal monthly amount of precipitation for Jasper County (from NCDC)**

January	2.38 inches
February	2.38 inches
March	3.85 inches
April	3.90 inches
May	4.39 inches
June	3.74 inches
July	4.37 inches
August	3.43 inches
September	3.17 inches
October	2.77 inches
November	3.99 inches
December	2.90 inches
Yearly Total	41.27 inches

Potential Areas Affected By Drought The entire County could be affected by a drought since precipitation patterns of the entire region are similar. Over 232,000 acres of Jasper County is used for cropland production such as wheat, soybeans, corn and hay. A severe drought would have a detrimental impact on the agriculture community. As many businesses within the County are agriculture related, such as seed, fertilizer and farm equipment businesses, a drought would have a severe economic impact.

While a number of Jasper County homes are provided water services through municipal water and water districts, there are still a small number of homes that use private wells. Severe drought could potentially cause some private wells to dry up or become too low and unsafe to drink from.

Previous Droughts According to the National Climatic Data Center, since 1950 there have been 2 droughts recorded that have affected Jasper County. In 1983 all Illinois counties were declared State disaster area due to high temperatures and low precipitation that began in June 1983. The Jasper County farming community also suffered a loss during the 1983 drought as cash receipts for crops was nearly \$4 million lower than those reported in 1984.

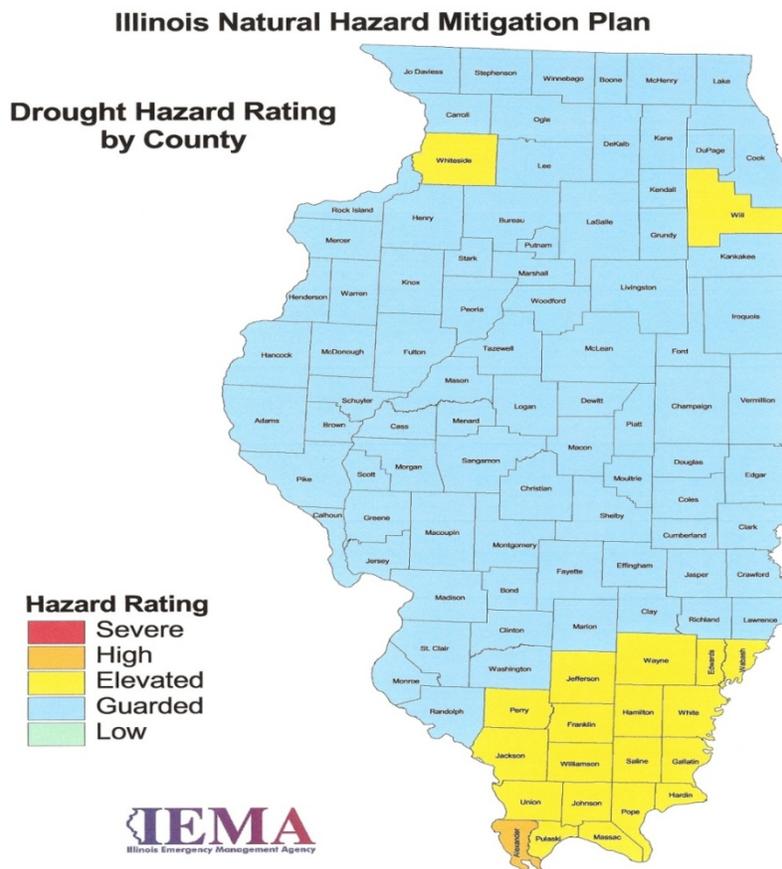
The most recent drought was in September/October 2007. Precipitation levels were below normal for much of 2007, the lack of precipitation combined with unseasonable hot conditions in August and September impacted crop health. The drought condition eased by late October when 2-4 inches of rain fell across the region.

Also, according to the National Weather Service in Lincoln, IL a large part of central and southern Illinois, including Jasper County, experienced a severe drought beginning in early 1952. By June 1955 the drought situation had greatly improved. Water shortages occurred across the

state. The situation was partially relieved by above normal rainfall during the first three months of 1953, but then rainfall deficiencies began to grow again after April 1953. By September 1953 it was apparent that the effect of the 1952 rainfall deficiency had not been fully overcome. The situation grew worse and by January 1954 Illinois communities were facing serious water shortages.

Probability of Future Droughts While droughts are not as persistent in Illinois as they are in other states, particularly the Western part of the U.S., they still can cause deep economic impacts on rural farming communities. The lack of severe droughts locally also makes them more difficult to predict. According to the Illinois Natural Hazard Mitigation Plan, Jasper County ranks at the guarded level for the risk of a drought. The NCDC uses a variety of tools to predict droughts across the U.S. such as long lead forecast, soil moisture tools, seasonal precipitation forecasts and El Nino precipitation and temperature composites.

**Figure 4 Drought Hazard Rating by County (from 2007 State Hazard Mitigation Plan)**



Local Vulnerability The entire Jasper County region is vulnerable to drought. A drought, depending on severity, would impact the local agriculture industry, water supply and increase the risk for fire hazards. No damage to buildings would occur from drought conditions.

According to the 2007 Census of Agriculture, there were 882 farms in Jasper County. Agriculture generated revenue for 2009 was \$1.4 million for the County. A severe drought would have a detrimental impact on Jasper County's workforce as agriculture is a major employment sector for the region. For example, GSI, a grain dryer manufacturer, is one of the largest employers in Jasper County with 300 workers. Additionally, the timing of a severe drought would have an effect on the impact. One of the worst times a drought could occur would be during peak growing season. A drought then would be felt essentially by every sector of the agriculture community ranging from farmers producing crops and livestock to buyers in the food market.

Water supply would also be impacted by a severe long term drought. Of most concern would be residential wells, as low wells can become contaminated with sediment and bacteria, making the water from the well unusable and unsafe to drink from. Residential wells would be the first to be affected by a drought, before municipal wells and reservoirs.

## Earthquake

Description According to the Illinois Natural Hazard Mitigation Plan, earthquakes occur when rocks forming the Earth’s crust slip past each other along a fault. This slippage happens when the buildup of stresses becomes to the point that they are greater than the strength of the locked up section of rocks along the fault plane. When faulting takes place, the sudden release of energy produces vibrations or seismic (shock) waves that radiate from the main fault movements. These waves cause the shaking or “quaking” that lasts tenths of seconds to a few minutes, depending on the magnitude of the event (energy released) and what kinds of rocks they travel through and the stiffness or lack of stiffness of the soils at a site. Where the faulting starts, at some depth below the Earth’s surface, is the hypocenter (focus) of an earthquake. The point on the surface directly above the focus is the epicenter.

Measuring Earthquakes There are two different ways to measure earthquakes based on their magnitude and intensity.

According to the Illinois Emergency Management Agency, the magnitude of an earthquake is measured by a tool called the Richter Scale. When earthquake magnitude is described it is important to remember two items, first the size of an earthquake increase by a factor of 10 as magnitude increases by one whole number. For example, a magnitude 6.0 earthquake is 10 times larger than a 5.0 magnitude earthquake. Second, the amount of energy released increases by a factor of about 32. For example, a magnitude 6.0 earthquake releases 32 times more energy than a magnitude 5.0 earthquake.

Earthquake intensity is commonly measured by the Modified Mercalli Scale which is based upon personal experiences of an earthquake rather than scientific measurements and data.

**Figure 5 Modified Mercalli Scale**

<b>Modified Mercalli Scale</b>		<b>Level of Damage</b>	<b>Richter Scale</b>
1-4	Instrumental to Moderate	No damage	$\leq 4.3$
5	Rather Strong	Damage too negligible. Small, unstable objects displaced or upset; some dishes and glassware broken.	4.4 - 4.8
6	Strong	Damage slight. Windows, dishes, glassware broken. Furniture moved or overturned. Weak plaster and masonry cracked.	4.9 – 5.4
7	Very Strong	Damage slight-moderate in well built structures; considerable in poorly built structures. Furniture and weak	5.5 – 6.1

		chimneys broken. Masonry damaged. Loose bricks, tiles, plaster, and stones will fall.	
8	Destructive	Structure damage considerable, particularly to poorly built structures. Chimneys, monuments, towers, elevated tanks may fail. Frame houses moved. Trees damaged. Cracks in wet ground and steep slopes.	6.2 – 6.5
9	Ruinous	Structural damage severe; some will collapse. General damage to foundations. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground; liquefaction.	6.6 – 6.9
10	Disastrous	Most masonry and frame structures/foundations destroyed. Some well built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Sand and mud shifting on beaches and flat land.	7.0 – 7.3
11	Very disastrous	Few or no masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Rails bent. Widespread earth slumps and landslides.	7.4 – 8.1
12	Catastrophic	Damage nearly total. Large rock masses displaced.	> 8.1

Previous Earthquakes While there is no data showing an epicenter of an earthquake in Jasper County, there have been several earthquakes originating in neighboring counties, in which the County has felt numerous tremors.

The largest reported earthquake was along the New Madrid, Missouri region during the winter of 1811-1812. A series of 4 earthquakes with magnitudes greater than 7.0 and multiple aftershocks rattled the Midwest region, including Jasper County. According to the Illinois Natural Hazard Mitigation Plan, settlers along the Ohio, Wabash and Mississippi Rivers reported various types of liquefaction, such as sand blows, fissures, banks collapse, that occurred in the bottom lands of these river valleys. There are no records for Jasper County that date back to this period, but it is believed that little damage was experienced as the County had very few settlers at the time.

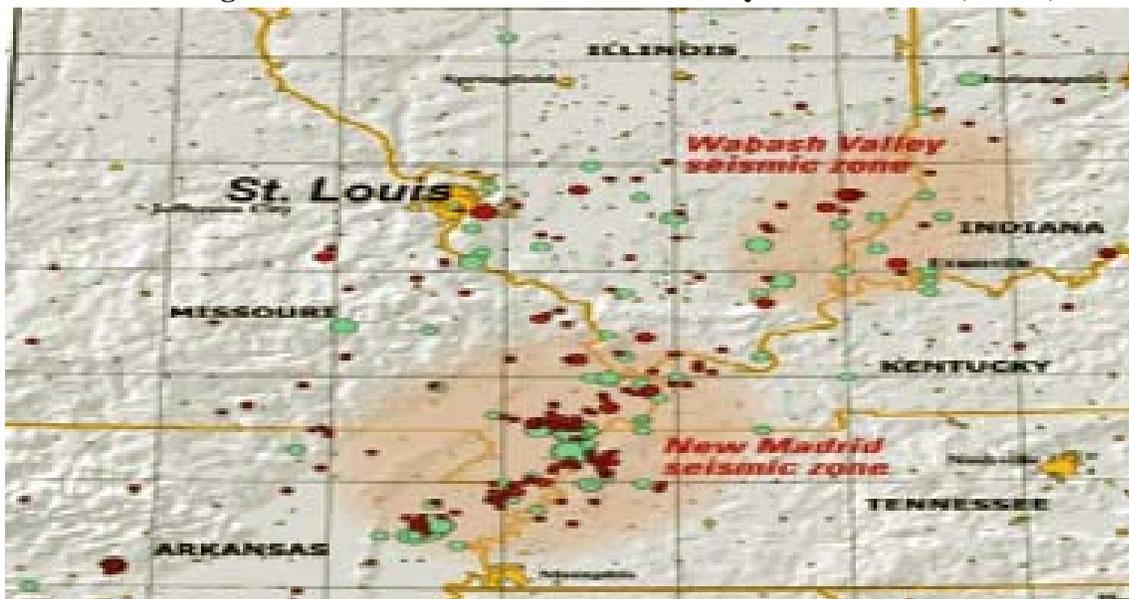
The Halloween earthquake of 1895 had an estimated magnitude of 6.8 on the Richter scale with the epicenter at Charleston, Missouri. According to the Illinois State Geological Survey, the

earthquake was felt as far away as Pittsburgh, New Orleans and Topeka. Serious structural damage was only reported in the epicenter. No damage was reported in Jasper County.

More recent earthquakes to be felt in Jasper County have occurred along the Wabash Valley Fault. In June 1987 a 5.2 magnitude earthquake along this fault caused damage to chimneys and cracked sidewalks in neighboring Lawrence County. While tremors were felt in Jasper County, there were no reports of damage.

The most recent earthquake experienced was again on the Wabash Valley Fault near Mt. Carmel, Illinois located approximately 58 miles from Jasper County. The earthquake occurred in the early morning hours on April 18, 2008 which measured 5.2 on the Richter scale. Tremors were felt in Jasper County, but there were no reports of damages or injuries.

**Figure 6 New Madrid and Wabash Valley seismic zones (USGS)**



Probability of Future Earthquakes Scientists have spent decades studying earthquakes, trying to predict when the next “big one” will hit. However, predicting an earthquake has been done with little success, especially in regions that earthquakes are rare. Earthquake probability for Jasper County is based on historical reference. Historical data shows that larger earthquakes outside of Illinois have caused more damage than earthquakes originating within the state.

The New Madrid seismic zone has been the most studied for earthquake activity, as it has produced the largest historical earthquake. According to the USGS, there is a 7-10% chance of a repeat of the 1811-1812 New Madrid earthquake over a 50 year period of time. The Illinois Natural Hazard Mitigation Plan ranks Jasper County at an elevated level for earthquake hazard.

Local Vulnerability Using HAZUS software an analysis of the damage that could be caused in Jasper County by a 6.0 and 7.0 magnitude earthquake at three different epicenters is illustrated below.

**6.0 magnitude earthquake on the New Madrid Fault Line**

- No buildings will be at least moderately damaged
- No critical facilities will be damaged
- No injuries or deaths will occur
- All households will retain potable water and electric services

**6.0 magnitude earthquake on the Wabash Valley Fault Line**

- 107 buildings will be at least moderately damaged which is approximately 2% of the total buildings within the County
  - Building related losses are estimated to be \$3.29 million, which 24% are related to business interruption
- 1 fire station located in Hidalgo receives damage but is still considered functional
- 1 school in Ste. Marie receives damage but is still considered functional
- While there will be several leaks in the potable water system and disturbances in the electrical system, no residents are expected to be without water or electrical services
- 1 household will be displaced
- 1 injury is expected but hospitalization will not be needed

**Figure 7 Expected Building Damage by Occupancy**

	No Damage	Slight Damage	Moderate Damage	Extensive Damage	Complete Damage
<b>Agriculture</b>	182	13	6	1	0
<b>Commercial</b>	227	17	7	1	0
<b>Education</b>	10	1	0	0	0
<b>Government</b>	13	1	0	0	0
<b>Industrial</b>	68	5	2	0	0
<b>Other Residential</b>	1209	91	37	3	0
<b>Religion</b>	23	2	1	0	0
<b>Single Family</b>	3293	147	41	7	1
<b>Total</b>	5025	277	94	12	1

**5.2 magnitude earthquake based on the location of the 1987 earthquake in Richland County**

- 34 buildings will be at least moderately damaged which is approximately 1% of the total buildings within the County
  - Building related losses are expected to be \$1.93 million, which 12% are related to business interruption
- No critical facilities will receive damage
- All households will retain potable water and electric services
- No households will be displaced
- There will be no injuries or deaths

**Figure 8 Expected Building Damage by Occupancy**

	No Damage	Slight Damage	Moderate Damage	Extensive Damage	Complete Damage
<b>Agriculture</b>	194	6	2	0	0
<b>Commercial</b>	243	6	2	0	0
<b>Education</b>	11	0	0	0	0
<b>Government</b>	14	0	0	0	0
<b>Industrial</b>	72	2	1	0	0
<b>Other Residential</b>	1290	38	12	1	0
<b>Religion</b>	25	1	0	0	0
<b>Single Family</b>	3417	56	14	2	0
<b>Total</b>	5265	109	31	3	0

**7.0 magnitude earthquake on the New Madrid Fault Line**

- No buildings will be at least moderately damaged
- No critical facilities will be damaged
- All residents will retain their water and electrical services
- There will be no injuries or deaths

**7.0 magnitude earthquake on the Wabash Valley Fault Line**

- 678 buildings will be at least moderately damaged
  - Building related losses are expected to be \$26.97 million, which 22% are related to business interruption
- No critical facilities will be damaged
- There will be \$500,000 in damages to highways
- All residents will retain their water and electrical services
- 12 households will be displaced with 8 people requiring temporary shelter
- A total of 26 people will be injured but will not require hospitalization

- A total of 5 people will be injured and require hospitalization, but not with life threatening injuries

**Figure 9 Expected Building Damage by Occupancy**

	<b>No Damage</b>	<b>Slight Damage</b>	<b>Moderate Damage</b>	<b>Extensive Damage</b>	<b>Complete Damage</b>
<b>Agriculture</b>	105	41	39	14	2
<b>Commercial</b>	133	57	46	15	2
<b>Education</b>	6	2	2	0	0
<b>Government</b>	8	3	2	1	0
<b>Industrial</b>	38	16	15	5	1
<b>Other Residential</b>	821	266	202	45	5
<b>Religion</b>	16	5	4	1	0
<b>Single Family</b>	2624	588	220	48	9
<b>Total</b>	3752	978	531	130	18

**7.0 magnitude earthquake based on the location of the 1987 earthquake in Richland County**

- 2,274 buildings will be at least moderately damaged, which is over 42% of the total buildings in Jasper County
  - Building related losses are estimated at \$133 million, which 19% are related to business interruption, 57% are residential losses
- 260 buildings will be considered unsafe and a total loss
- A elementary school in Ste. Marie will be completely destroyed
- Bridges will be damaged but not at a complete loss
- 804 households will initially have interruptions in water supply, but all residents are expected to have full water service after 7 days
- 2,096 households will initially have no electricity, after 7 days 353 households remain without power, after 30 days 48 households remain without power
- 156 households will be displaced with 101 people needing temporary shelter accommodations
- 189 injuries not requiring hospitalization will occur, 50 injuries requiring hospitalization with non life threatening injuries will occur, 8 life threatening injuries will occur, and 14 residents are estimated to die as a result of the earthquake

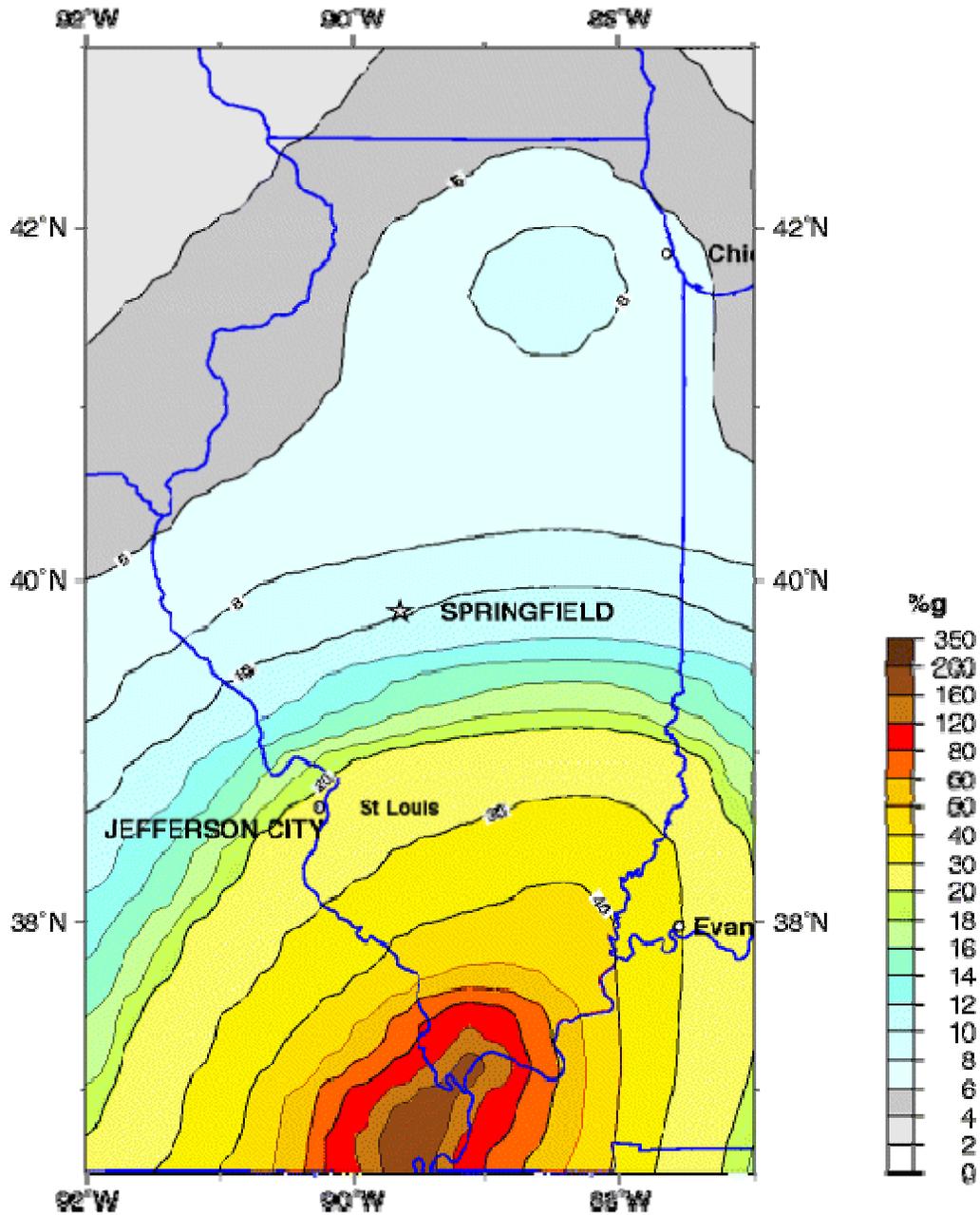
**Figure 10 Expected Building Damage by Occupancy**

	<b>No Damage</b>	<b>Slight Damage</b>	<b>Moderate Damage</b>	<b>Extensive Damage</b>	<b>Complete Damage</b>
<b>Agriculture</b>	33	34	64	49	22
<b>Commercial</b>	40	49	83	54	25
<b>Education</b>	2	2	4	2	1
<b>Government</b>	3	3	5	3	1
<b>Industrial</b>	12	13	24	18	8
<b>Other Residential</b>	300	348	393	222	77
<b>Religion</b>	6	6	7	5	2
<b>Single Family</b>	1183	1103	797	283	123
<b>Total</b>	1578	1557	1376	637	260

In summary, the worst case scenario for damage to Jasper County would be caused by an earthquake with an epicenter at the 1987 location in Jasper County near the Lawrence County line at a 7.0 magnitude. This earthquake would by far result in the most structural damage and result in the most injuries and deaths. Most injuries and deaths are expected to be related to falling objects and debris. However, it is difficult to estimate how much falling object and debris will occur.

The shaking hazard map has been developed using peak acceleration data to estimate ground shaking, thus better understand how much damage will occur from an earthquake. Below the seismic hazard map, which can also be referred to as a shaking hazard map, illustrates the levels of horizontal shaking from an earthquake. Shaking is represented as a % of g, g is the acceleration of a falling object due to gravity. Jasper County is at about 20-30% which is at the lower end of the scale. As shown, the closer to the epicenter, the greater the %g.

Figure 11 Seismic Hazard Map (from the USGS)



Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years  
site: NEHRP B-C boundary  
National Seismic Hazard Mapping Project (2006)

## Extreme Heat Hazard

Description According to FEMA, extreme heat is when temperatures are 10 degrees or more above the average high temperature for the region and last for an extended period of time. Humid or muggy conditions worsen the effects of extreme heat and occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. Furthermore, concrete and asphalt store heat longer and gradually release the heat at night which produces higher nighttime temperatures, which is usually found in urban areas.

Measuring Extreme Heat Measured by the heat index chart, extreme heat results from a combination of high temperatures and high humidity.

**Figure 12 HEAT INDEX CHART (Apparent Temperature)**

		Relative Humidity (%)																					
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
<b>A i r  T e m p  (F)</b>	<b>130</b>	131																					
	<b>125</b>	123	131	141																			
	<b>120</b>	116	123	130	139	148																	
	<b>115</b>	111	115	120	127	135	143	151															
	<b>110</b>	105	106	112	117	123	130	137	143	150													
	<b>105</b>	100	102	105	109	113	118	123	129	135	142	149											
	<b>100</b>	95	97	99	101	104	107	110	115	120	126	132	138	144									
	<b>95</b>	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136							
	<b>90</b>	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122					
	<b>85</b>	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	106			
<b>80</b>	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86	87	88	89	91				

The colors in the chart represent various heat disorders that can occur at the given heat index value, given prolonged exposure to the heat and/or physical activity. Note that exposure to full sunshine can increase the apparent heat index by up to 15 degrees. Additionally, the effects can vary from person to person (due to age, medical health, etc.).

Effects of extreme heat Extreme heat kills hundreds of people across the U.S. each year by pushing the human body beyond its limits. Under normal conditions the body produces perspiration that evaporates and cools the body, which controls the internal temperature. In extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain normal body temperature.

There are several different extreme heat related disorders:

- Heat cramps- muscular pains and spasms due to heat exertion usually in the abdomen and legs.

- Heat exhaustion- blood flow to the skin increases, causing blood flow to decrease to vital organs. Body fluids are lost through heavy sweating. This results in mild shock.
- Heatstroke- commonly known as sunstroke, the body quits producing sweat. The body temperature can rise high enough that brain damage and even death may occur as a result if the body is not cooled quickly.

**Figure 13 Relationship between heat index value and heat disorder**

Heat Index Value	Possible Heat Disorder
80 to 90	Fatigue possible with prolonged exposure and physical activity.
91 to 105	Sunstroke, heat cramps and heat exhaustion possible.
106 to 129	Sunstroke, heat cramps, and heat exhaustion likely; heat stroke possible.
130 or higher	<b>Heat stroke highly likely with continued exposure.</b>

Predicting Extreme Heat The National Weather Service issues heat advisories and heat warnings as necessary. For Jasper County the criteria is as follows:

- Heat Advisories: issued when the maximum heat index is expected to be at least 100 degrees, and/or the air temperature is expected to reach at least 95 degrees.
- Heat Warning: issued when the maximum heat index is expected to be at least 105 degrees, and the minimum heat index will be at least 75 degrees for a 48-hour period.

Factors such as location, how urban the area is, amount of concrete and asphalt, and the part of the country can vary the definition of a heat advisory and heat warning.

Potential Areas Affected by Extreme Heat All of Jasper County and the surrounding region is vulnerable to extreme heat hazard. According to the Illinois State Natural Hazard Mitigation Plan, Jasper County ranks at a high level for the threat of extreme heat events.

Previous Extreme Heat Events Data since 1950 is recorded regarding extreme heart events and can be found below.

**Figure 14 Previous Extreme Heat Events**

Dates	Temperature Ranges	Heat Index Values	Comments
July 26-July 27, 1997	95-100°	105-115°	Reports of county roads buckling
June 26-June 28, 1998	Upper 90s	105-110°	Reports of highways buckling
July 20-July 26, 1999	Lower to middle 90s	105-110°	
July 28-July 31, 1999	Lower 90s	105-110°	This heat wave occurred after a 2 day break from the previous 6 day heat

			wave
July 22-July 25, 2005	Mid 90s to 100°	105-115°	Very high humidity and overnight lows only in the middle to upper 70s
July 30-August 1, 2006	94-100°	105-110°	High humidity with overnight lows only in the mid 70s
August 2-August 3, 2006	94-100°	105-110°	Overnight lows only in the mid 70s

While no deaths have been reported in Jasper County due to extreme heat, there are numerous deaths reported around the State each year. Many of the reported deaths are of the elderly who have underlying health conditions which are worsened by extreme heat. Interestingly, extreme heat hazard once a natural disaster that has been overlooked because of its lack of visible damage, is now considered one of the most deadly disasters, according to a 2002 New York Times article.

Probability of Future Extreme Heat Events For the 59 year period observed (1950-2009) there were a total of 7 extreme heat event recorded. This indicates an 11% probability that an extreme heat event will occur in Jasper County in any given year.

Local Vulnerability While extreme heat doesn't cause damage to buildings, it can cause black topped county and township roads to become excessively hot causing the asphalt to buckle. Also as the temperature rises, air conditioning units tend to work harder using more electricity. Depending on the duration of the extreme heat event, crop loss could occur.

The most vulnerable population is the elderly, young children, and people with chronic illness. There are no recorded cases of a resident dying as the primary cause of heat exposure in Jasper County. Most of the heat related deaths across the state are in more urban areas.

## **Flood Hazard**

**Description** Flooding can occur as a result of several different factors, but each flooding event has the same end result of destruction and damage to personal property. In Jasper County flooding mainly occurs as a result of the following types of floods:

- Surface water runoff- Surface water runoff flooding can be a result of when the rainfall intensity exceeds the infiltration capacity of the soil. It also occurs when heavy rainfall falls on impervious surfaces, such as parking lots and other paved areas. This type of flooding is usually localized to a small area. Flood waters usually disappear soon after the heavy rains end.
- Overbank flooding- Overbank flooding occurs in both rivers and streams. The increase in volume of water within a river channel causes the overflow of the water from the channel onto the adjacent floodplain. This is the most common flood event in Jasper County. Overbank flooding can cause flash floods. The National Weather Service defines a flash flood as a rapid and extreme flow of high water into a normally dry area, or a rapid rise in a stream or creek above a predetermined flood level.
- Dam and Levee Failure- Levee overtopping or failure typically occurs from floods beyond their capacity to handle. Dam and levee failure can sometimes be traced to inadequate maintenance, especially those privately owned. Failure may also result from other natural hazards such as earthquakes.

**Predicting Flooding** There are 4 different types of flood alerts issued when a potential flood hazard may occur:

- Flood Watch- Flooding is possible. Often issued when heavy rains are predicted in the long range forecast.
- Flash Flood Watch- Flash flooding is possible. Often issued when severe thunderstorms with heavy rains are predicted. Residents should be prepared to take higher ground if needed.
- Flood Warning- Flooding is occurring or will occur in your area soon. If advised, evacuated immediately.
- Flash Flood Warning- A flash flood is occurring. Residents should seek higher ground immediately. Do not drive through water covered roadways.

Watches and warnings are sent to local radio and television stations by the National Weather Service in Lincoln, Illinois and to the Sheriff's 411 ALERT NOW system.

### **Local Radio Stations**

WVLN-WSEI Olney

WUSI- Olney

WIKK- Newton

WTAY-WTTE Robinson

### **Local Television Stations**

WTHI-Terre Haute

WTWO-Terre Haute

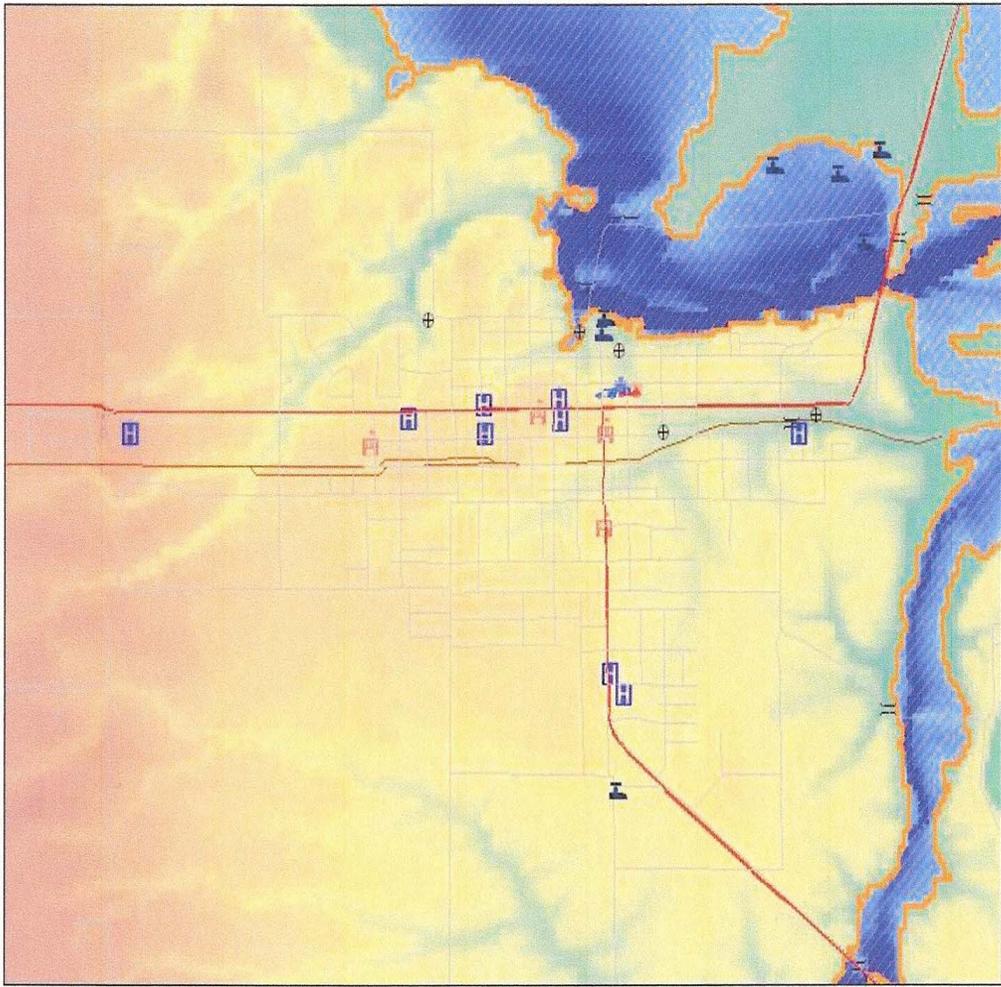
WCRA-WCRC Effingham  
WXEF- Effingham  
WMCI- Neoga/Mattoon  
WNOI- Flora  
KXIA-Newton weather radio station

Potential Areas Affected by Flooding

Approximately 14% of Jasper County is designated as a 100 year floodplain by FEMA on the 1985 countywide Flood Insurance Rate Map, which is the most recent flood map. A large portion of the floodplain is in the unincorporated areas of the county northwest of the City of Newton, which follows the Embarras River.

Figure 15

# City of Newton- 100 Yr Flood Plain Scenerio



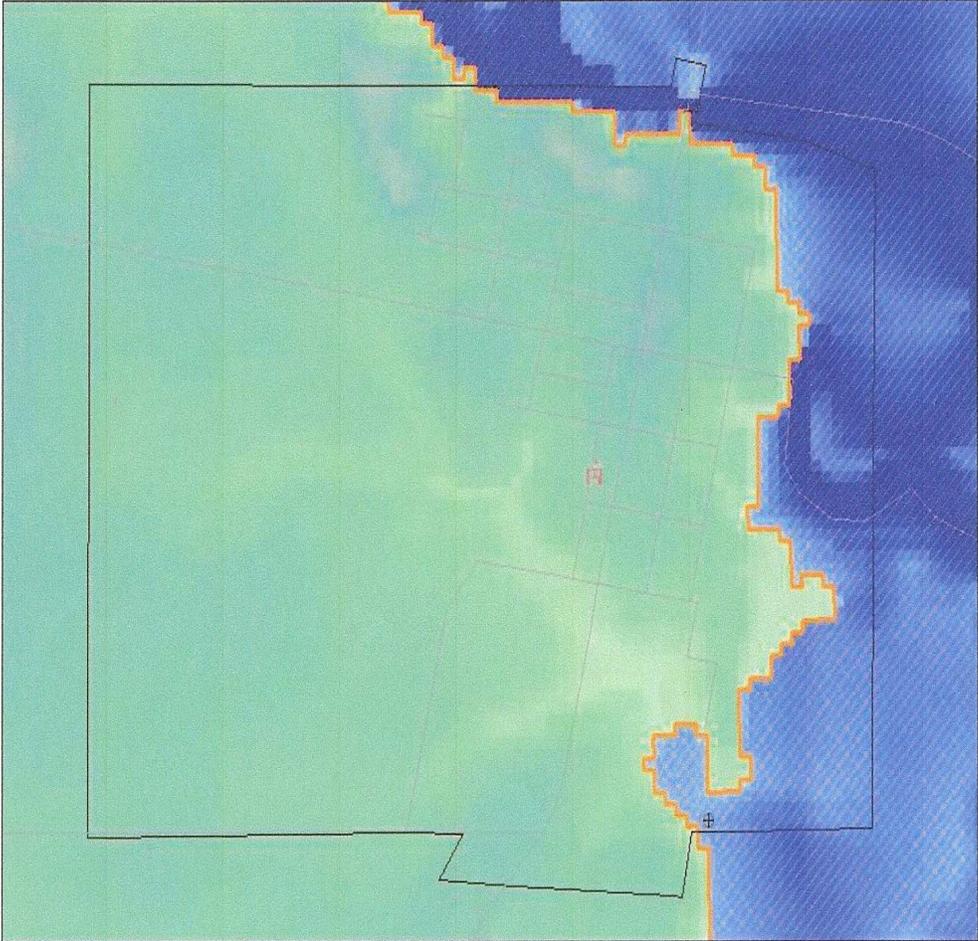
- Legend**
- Communication Fity
- Waste Water Fity
- Potable Water Fity
- Railway
- Highway
- Bridge
- Dams
- School
- Police Station
- Fire Station
- Emergency Center
- Care Fity
- Flood Boundary
- 100 Yr Flood Plain
- Elevation

0.5 0.25 0 0.5 Miles

**HAZUS**  
(c) 1997-2003 FEMA.

Figure 16

Ste. Marie - 100 Year Flood Scenerio



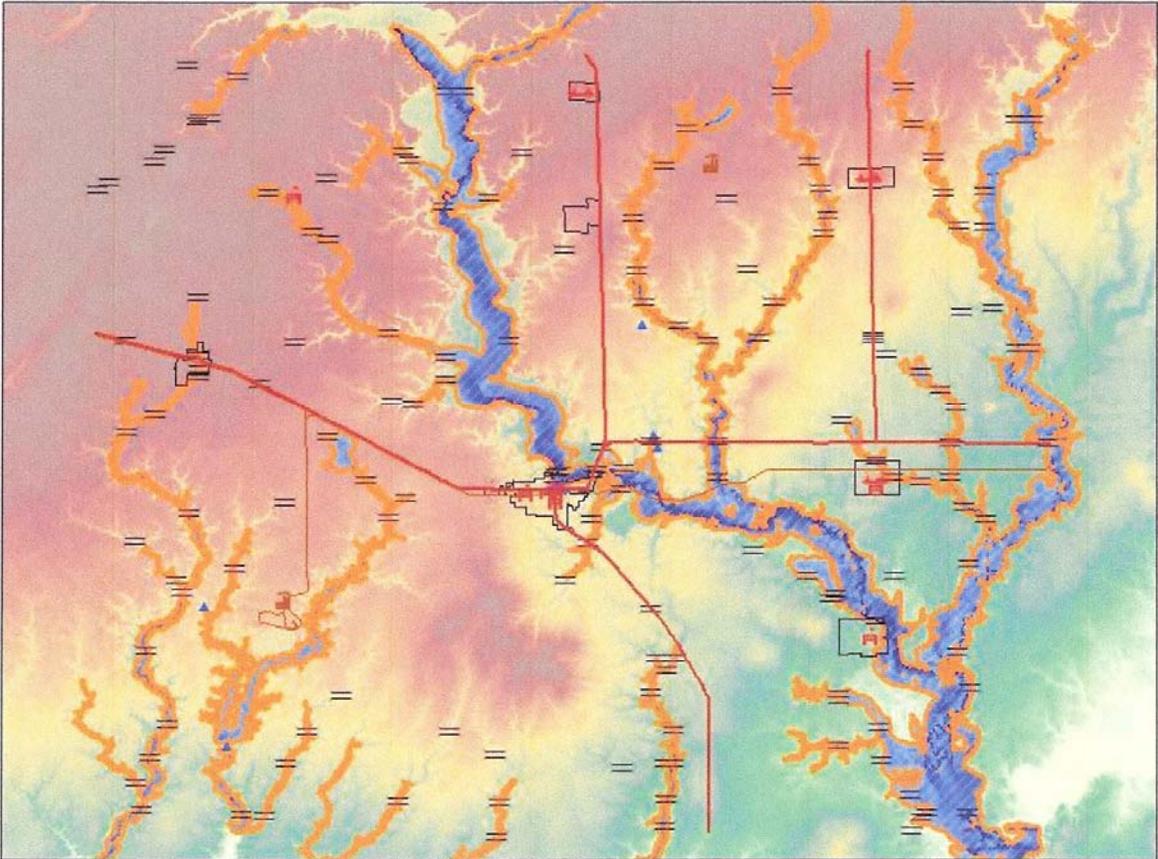
0.25 0.125 0 0.25 Miles

**HAZUS** PA

(c) 1997-2003 FEMA.

Figure 17

Study Region: Jasper County  
Scenario: 100 Year Flood



- Communication Flyt
- Electric Power Flyt
- Railway
- Highway
- Bridge
- Dams
- School
- Municipal Boundary
- Flood Boundary
- 100 Yr Flood Plain
- Elevation

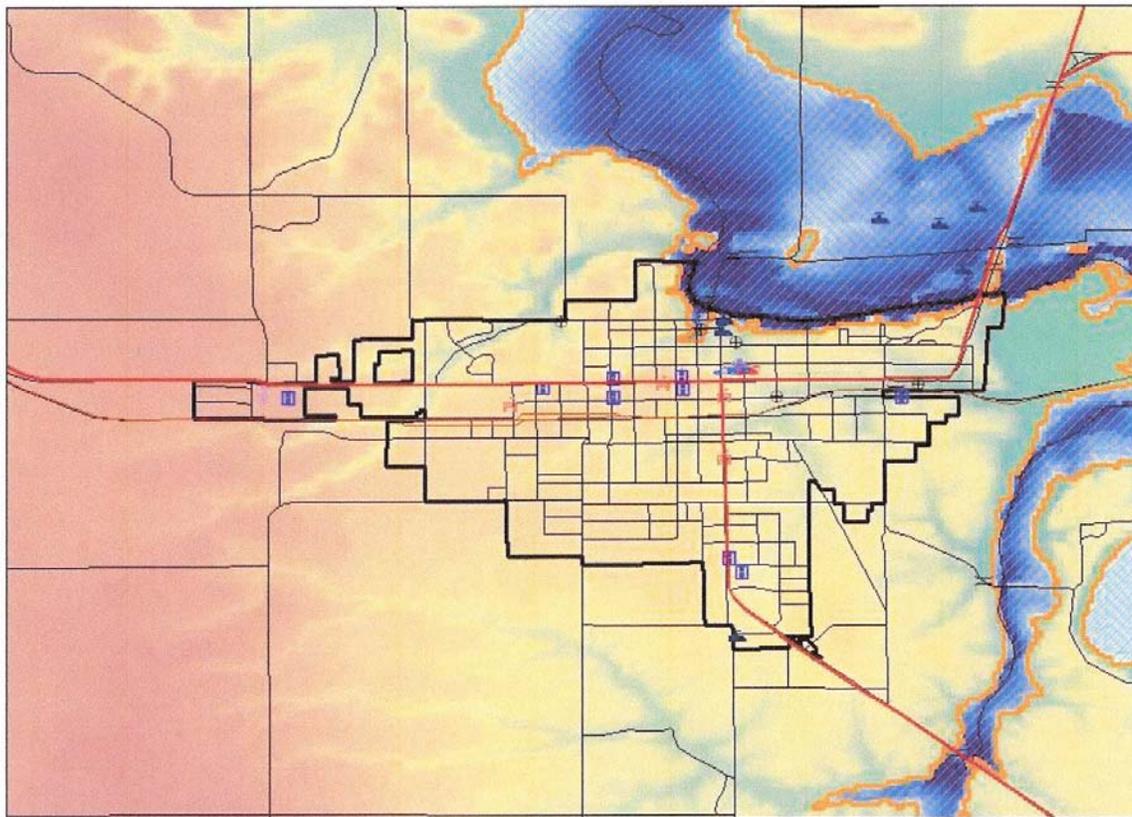
5 2.5 0 5 Miles

**HAZUS**  
MH

(c) 1997-2003 FEMA



# City of Newton - 500 Yr Flood Scenerio



## Legend

- CommunicationFty
- ElectricPowerFty
- WasteWaterFty
- PotableWaterFty
- Railway Segment
- Highway Segment
- Highway Bridge
- School
- Police Station
- Fire Station
- Emergency Ctr
- Care Fty
- Municipality
- 500 Flood
- Elevation

0.5 0.25 0 0.5 Miles

**HAZUS**  
(c) 1997-2003 FEMA



**Figure 18**

Figure 19

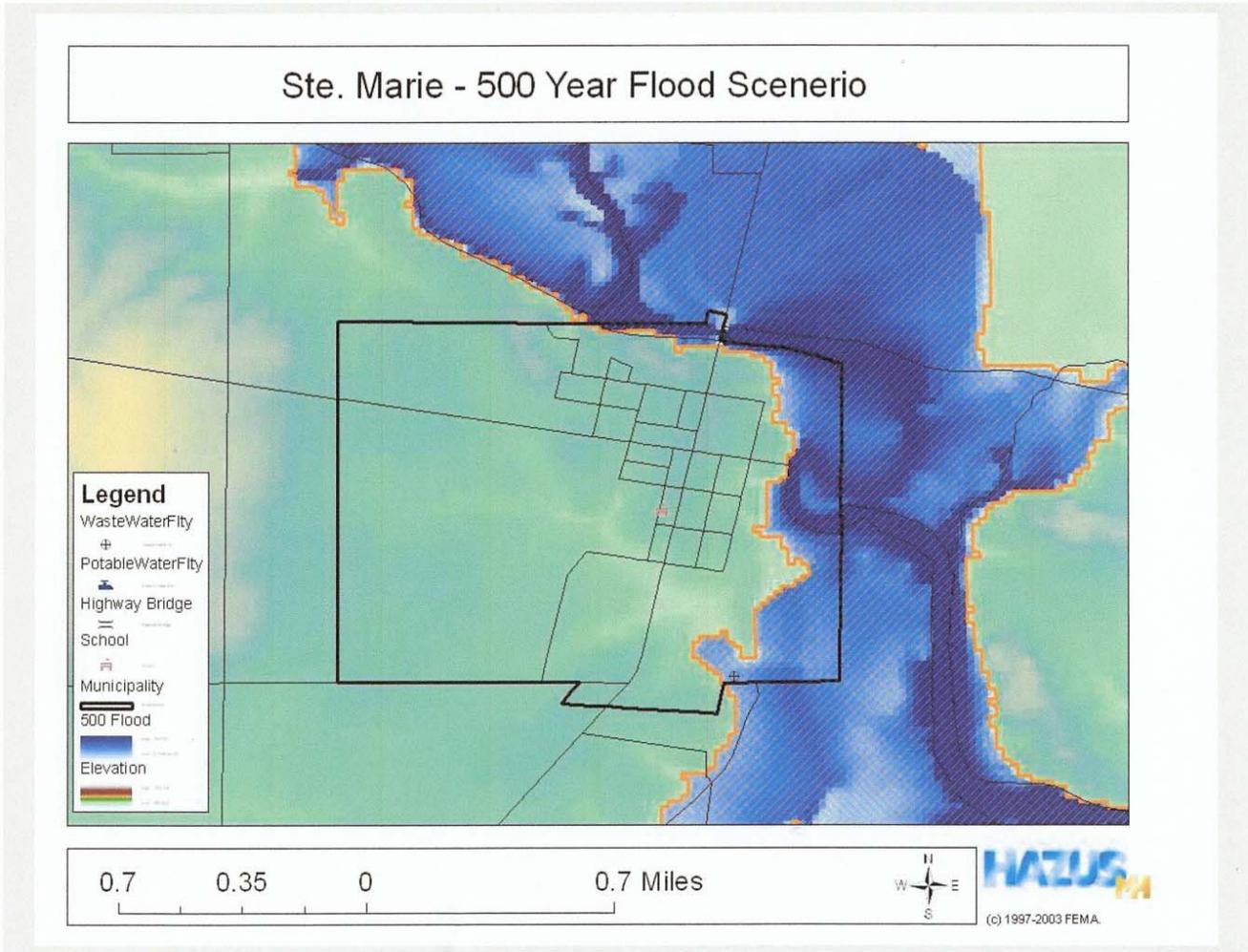
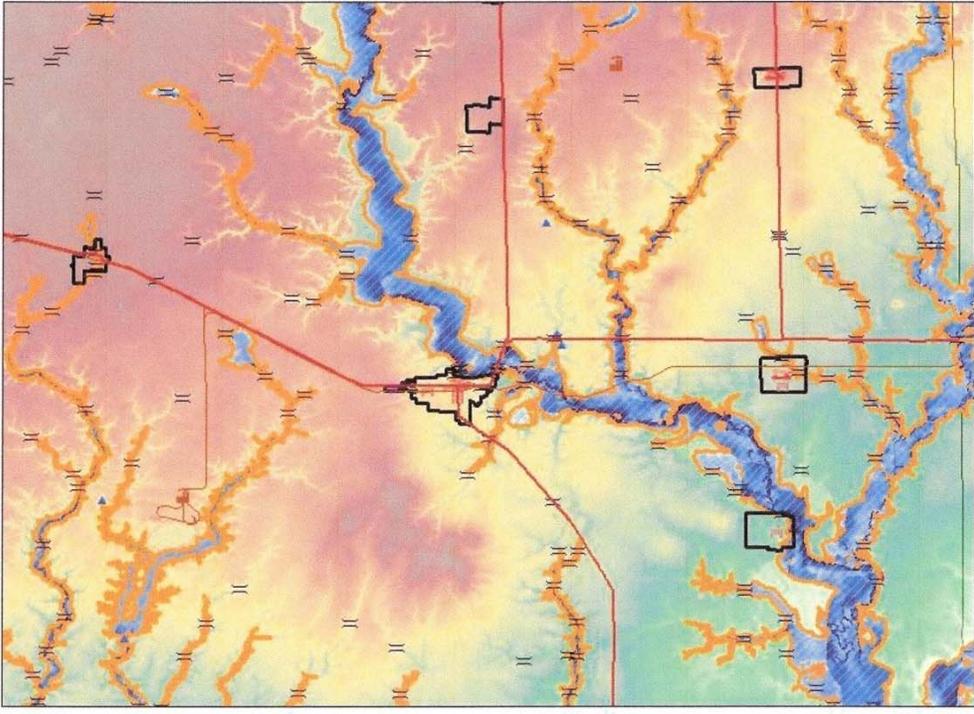


Figure 20

Study Region: Jasper County  
Scenario: 500 Year Flood



3 1.5 0 3 Miles

**HAZUS**  
(c) 1997-2003 FEMA

Previous Flood Events Data since 1950 is available to reflect flooding events in Jasper County. During the period from January 1950-April 30, 2010 a total of 21 floods events have been recorded.

**Figure 21 Previous Flood Events**

<b>Location</b>	<b>Date</b>	<b>Type</b>	<b>Comments</b>
Countywide	5/18/1995	Flash Flood	
Countywide	5/8/1996	Flash Flood	Thunderstorms produced 4-8 inches of rain
Countywide	7/5/2000	Flash Flood	3 Homes in Newton were evacuated
Countywide	6/5/2001	Flash Flood	Numerous road closures. Rt. 49, 33, and 130 north of Newton closed due to flooding
Countywide	5/12/2002	Flash Flood	Flooded basements in Newton
Countywide	5/12/2002	Flood	Ongoing precipitation
Countywide	5/12/2002	Flood	Runoff from streams and river result in flooding on Rt. 130 between Jasper and Richland Counties
Countywide	5/26/2004	Flash Flood	Heavy Rains
Countywide	5/27/2004	Flash Flood	Heavy Rains
Countywide	5/30/2004	Flash Flood	Numerous roads flooded including Rt 33 between Willow Hill and Newton
Northern Jasper Co.	8/26/2004	Flash Flood	Heavy rains resulting in Rt 130 flooded
Newton	1/13/2005	Flash Flood	Water over Rt 33 in Newton
Island Grove	6/6/2008	Flash Flood	Basements flooded, small bridges washed out, portions of Rt 33 closed
Ste Marie	6/6/2008	Flood	Embarras River reached an all time high resulting in agricultural flooding- Jasper Co declared a disaster area

Ste Marie	6/7/2008	Flash Flood	Levee break near the Yaeger Bridge southeast of Ste Marie which caused flooding across the southeast portion of Jasper Co.
Island Grove	2/11/2009	Flood	Appleshed Road blocked by high water
Wheeler	5/13/2009	Flash Flood	Heavy rain
Island Grove	5/14/2009	Flash Flood	3-5 inches of rain fell in 2-3 hours
Wheeler	6/20/2009	Flash Flood	Thunderstorms produced 5 inches of rain
Island Grove	6/21/2009	Flash Flood	Heavy rain
Island Grove	8/19/2009	Flash Flood	4-5 inches of rain fell in 2 hours

There have been no deaths reported as a result of flooding in Jasper County; however there are numerous deaths reported across the State and U.S. each year from flood events. Many deaths from flooding can be avoided by not driving through water covered roadways and seeking high ground during a flood watch or warning.

Probability of Future Flood Events A 100 flood is calculated by FEMA based on a 1% chance, in any given year, of a flood occurring at a given elevation. More vulnerable areas are land, roads and structures that are in a designated floodplain. A floodplain will have some flooding nearly every year at some point in time.

Over the past 60 years there have been 4 Presidential Disaster Declarations in Jasper County due to flooding:

#871 in 1990	#1416 in 2002
#1112 in 1996	#1771 in 2008

Based on the four disaster declarations from 1950-2010, the probability of a major flood occurring in Jasper County is 7% in any given year.

Local Vulnerability The local vulnerability assessment was conducted using FEMA approved HAZUS software under the 100 and 500 year flood scenarios.

## **100 year flood event**

### *Infrastructure*

- No critical facilities will be damaged
- The waste water facility at Ste Marie will be damaged at 15%, but is still considered usable, estimated damage is \$6,353,000.
- A total of 7 bridges throughout the county are damaged, but also still deemed as usable, estimated damage is \$2,560.
- 3 potable water facilities will be damaged at 15%, this will affect their functioning capabilities, estimated damage is \$16,682,820
- A total of 183,966 buildings are estimated to receive some flooding throughout the county.

### *Households*

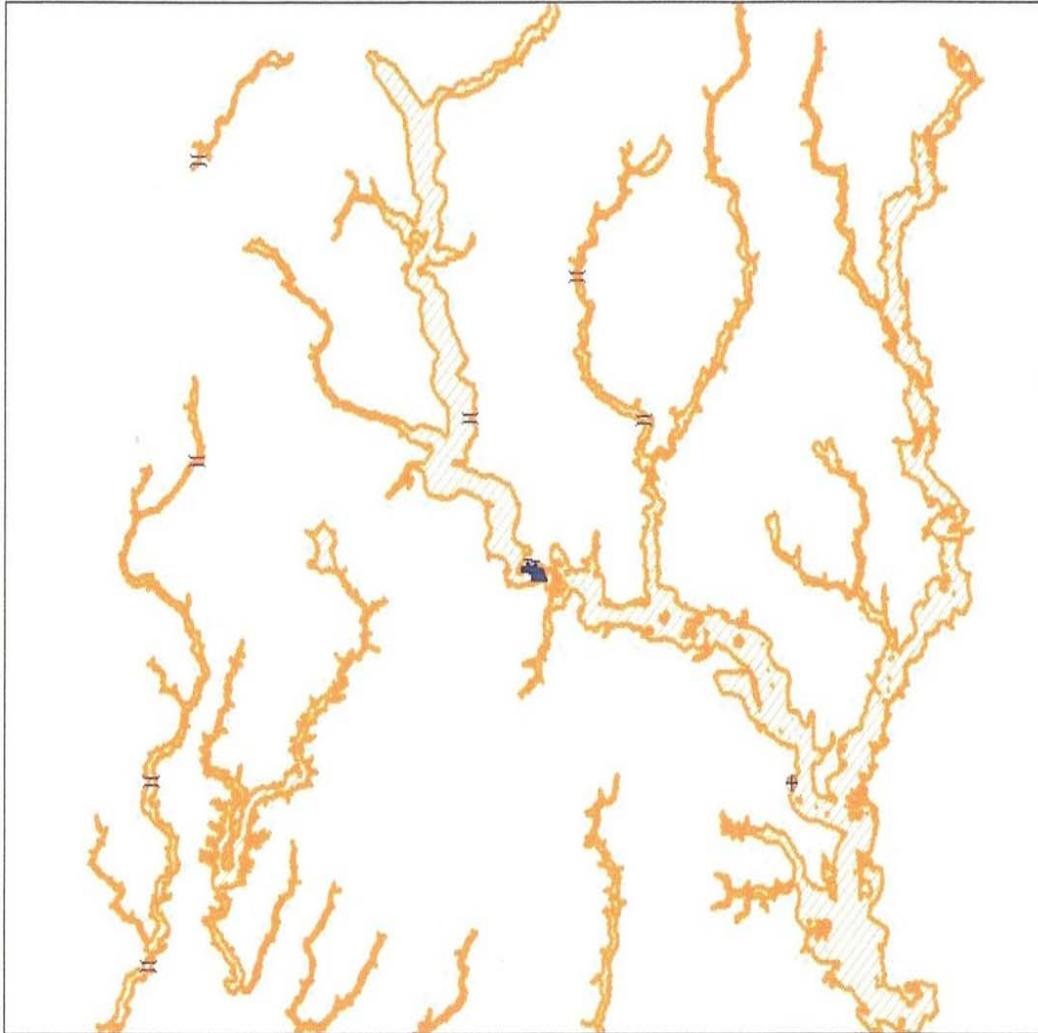
- 171 households will be displaced
- 51 residents will require public shelter needs

### *Economic Loss (including building, contents and inventory)*

- \$8,400,000 losses in residential property
- \$1,290,000 losses in commercial property
- \$690,000 losses in industrial property

Figure 22

### Jasper County 100 Year Flood Damaged Facilities



#### Legend

- Waste Water Facilities
- ⊕ Waste Water Facilities
- Potable Water Plant
- 🏠 Potable Water Plant
- Highway Bridge
- ≡ Highway Bridge
- Boundary Polygon
- 🟡 Boundary Polygon

3 1.5 0 3 Miles

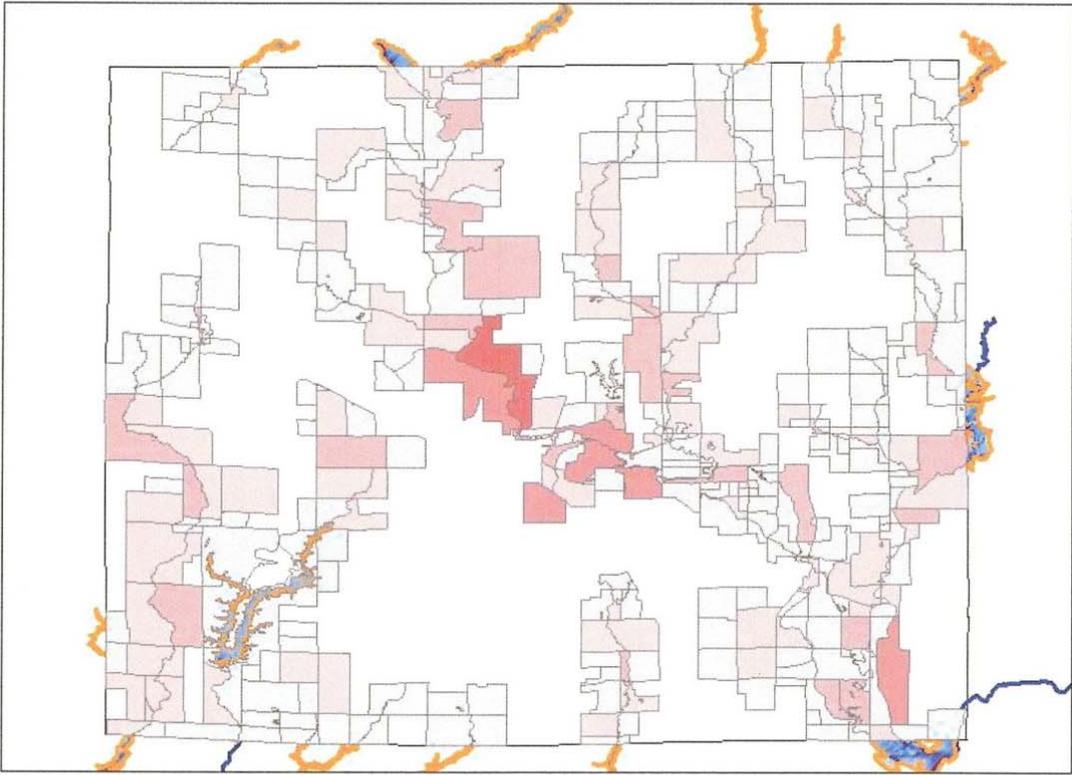


(c) 1997-2003 FEMA.



Figure 23

### Jasper County 100 Year Flood Total Building Losses (Full Replacement Value)



- Legend**
- Total Building Losses
    - 0.00 to 24.00
    - 24.00 to 86.00
    - 86.00 to 254.00
    - 254.00 to 588.00
    - 588.00 to 1066.00
  - BoundaryPolygon
    - BoundaryPolygon
  - rpd100
    - High : 34.7023
    - Low : 4.02834e-005
  - Study Region Boundary
    - Study Region Boundary

3 1.5 0 3 Miles

**HAZUS**  
(c) 1997-2003 FEMA.

## **500 year flood event**

### *Infrastructure*

- No critical facilities will be damaged
- Waste water facilities at Ste. Marie and Newton both damaged at 8.6% for a total of \$12,745,000.
- A total of 7 bridges damaged throughout the county, but are still deemed as usable, estimated damage is \$5,130.
- 4 potable water facilities damaged at 22% with estimated costs of \$33,863,000, which will affect their functioning capabilities.
- A total of 188,360 buildings are estimated to receive some flooding throughout the county.

### *Households*

- 193 households will be displaced
- 62 residents will require public shelter needs

### *Economic Loss (including building, contents and inventory)*

- \$10,560,000 losses in residential property
- \$1,440,000 losses in commercial property
- \$840,000 losses in industrial property

Figure 24

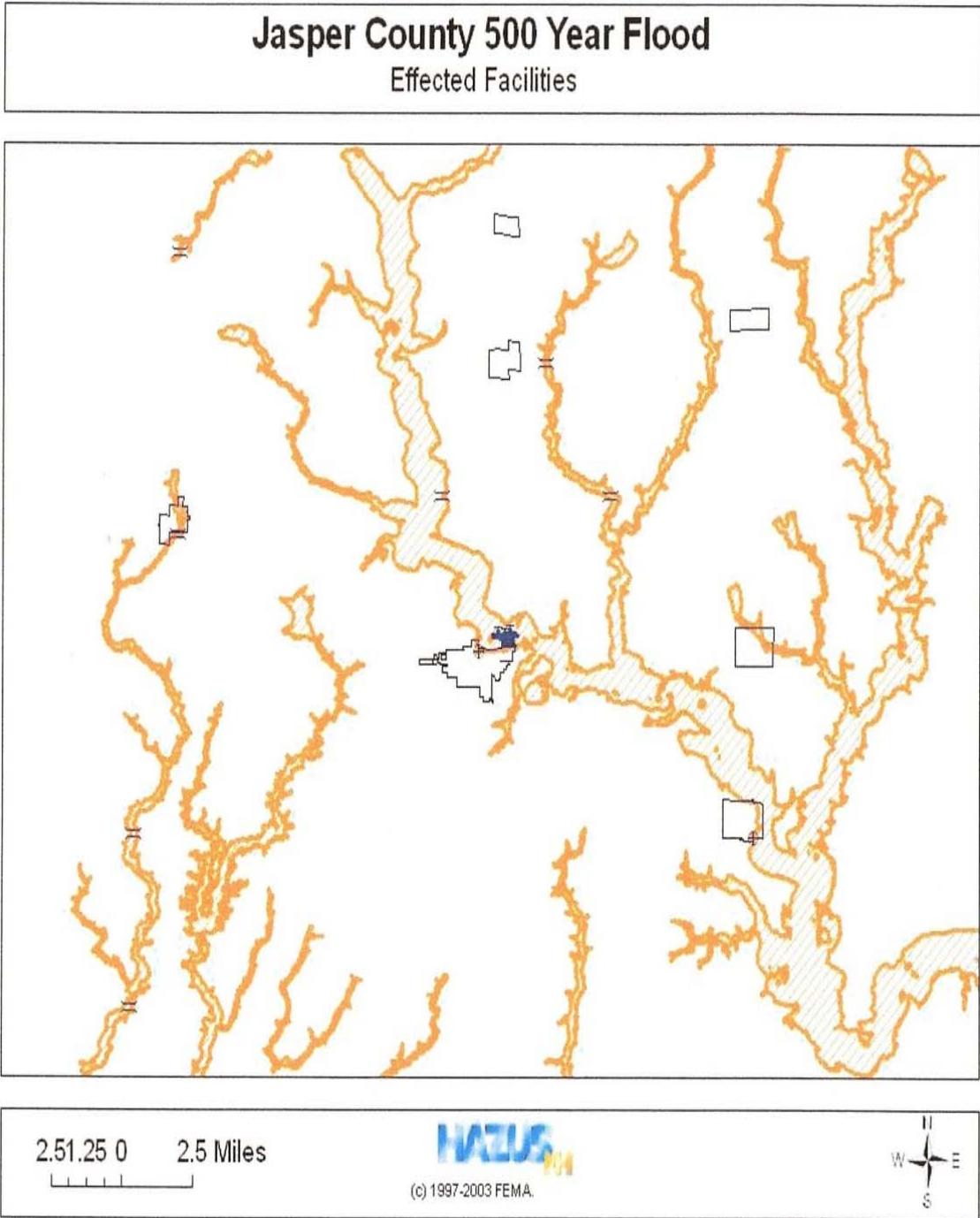
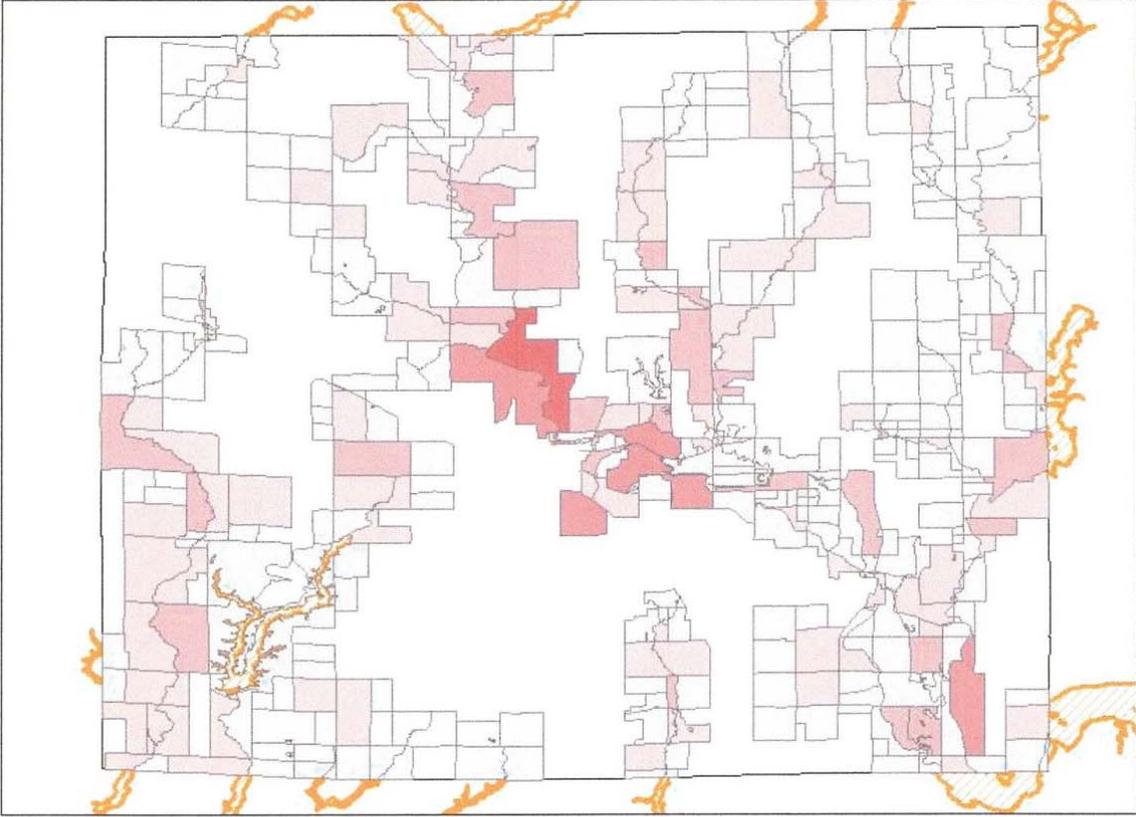


Figure 25

# Jasper County 500 Year Flood Total Building Losses (Full Replacement)



- Legend**
- Total Building Losses
- 0.00 to 30.00
  - 30.00 to 102.00
  - 102.00 to 290.00
  - 290.00 to 619.00
  - 619.00 to 1258.00
- Flood Boundary
- Flood Boundary
  - Study Region Boundary
  - Study Region Boundary

3 1.5 0 3 Miles

**HAZUS**  
(c) 1997-2003 FEMA.

Jasper County participates in the National Flood Insurance Program (NFIP) and has adopted a floodplain ordinance. Currently, measures are being taken to enforce the ordinance and ensure

the protection of personal life and property. Potential flooding and development in the floodplain will continue to be monitored as development continues within the county.

### **Mine Subsidence Hazard**

Description According to the Illinois Department of Natural Resources, underground mining of coal and other minerals creates voids that are subject to collapse. The collapse causes sinking of the ground surface, the settlement is called mine subsidence. Subsidence is possible wherever coal has been removed in a room-and-pillar mine. Mine subsidence can occur at any time, ranging from immediate to 100 years or more after mining.

There are two forms of mine subsidence in Illinois, pit and sag. Pits are steep-sided holes that form over mines that are less than 180 feet deep. Most pits are less than 16 feet in diameter and 8 feet deep. In many instances, pits do not cause structural damages to homes.

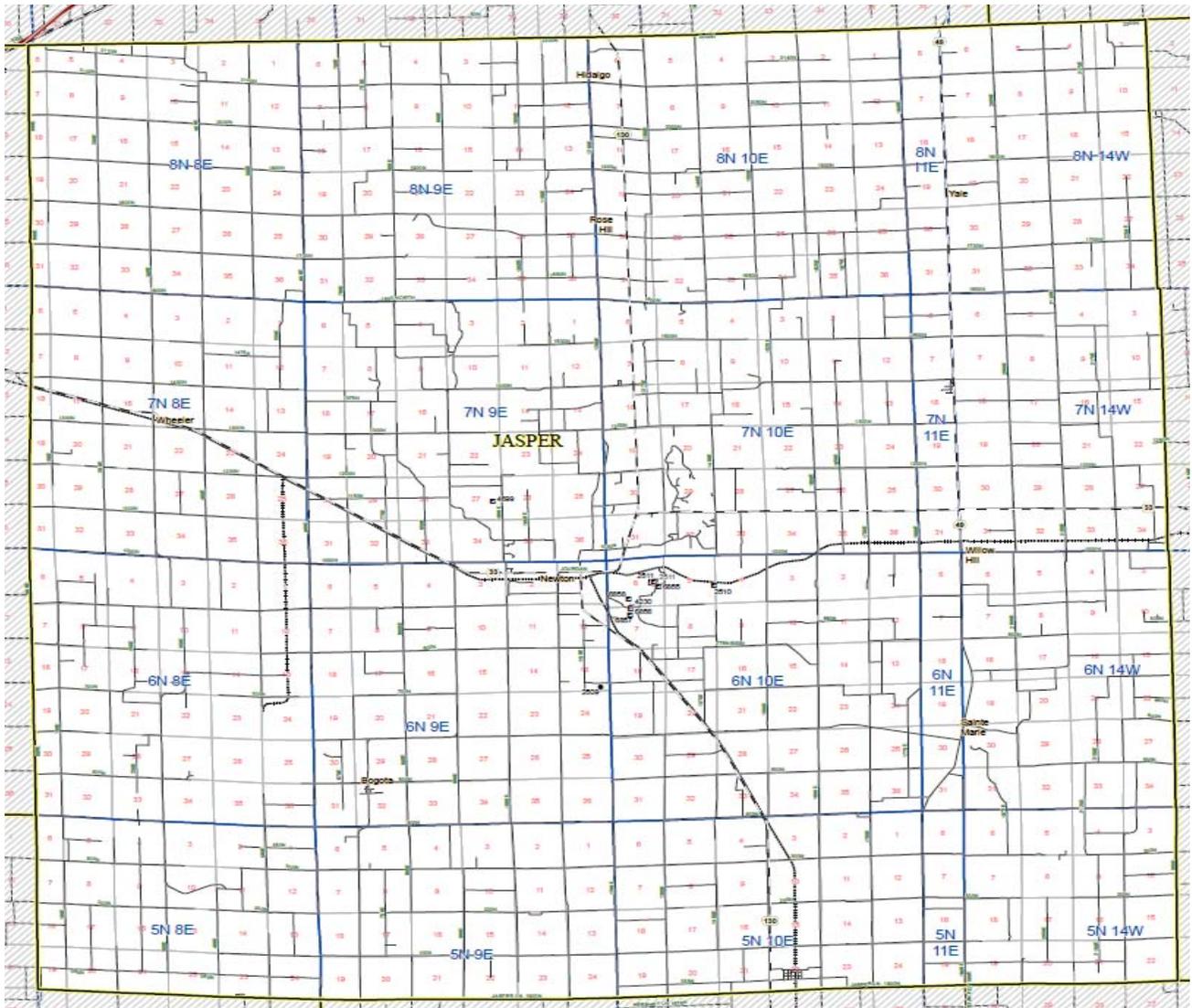
Sags are large, shallower depressions that form in the ground surface as a result of failures within underground room-and-pillar mines. Some sags are 350 to 450 feet in diameter, but can be larger or smaller. Within the subsiding area of a sag, the ground bends or warps downward forming a bowl shaped depression.

Effects of Mine Subsidence Nearly all man made structures can be affected by mine subsidence. Water, sewer and gas lines can break, underground telephone lines can break, roadways and bridges can buckle and homes can be damaged. Home owners generally first begin to see cracks in sections of their foundation and walls, this is followed by windows and doors that begin to stick or jam. In extreme cases, the foundation will pull away from the frame of the house and cracks in the ground are seen.

Jasper County Mines There is a limited amount of information regarding coal mines in Jasper County. However, according to the Soil Survey of Jasper County, there is an estimated 3 billion tons of coal reserves from the coal bearing Pennsylvanian rocks in the county, which is more than 350 feet below the surface. It is estimated that approximately 24,000 tons of coal has been mined, but currently none of the mines in Jasper County are active. Much of the coal that has been mined was for private use, for example to heat homes.

There are 8 mines recorded in Jasper County with the Illinois State Geological Survey. The majority of the mines are located southeast of the City of Newton and are considered abandoned shaft mines. There is one mine that is classified as an abandoned underground coal mine which is also located southeast of Newton.

**Figure 26 Location of Mines in Jasper County**



County	• Opening type unknown
Township	• Uncertain location
Section	✕ Active strip tippie
Quadrangle study (Available on Website)	✕ Abandoned strip mine
Coal mine - active	⊠ Active shaft
Underground coal mine - abandoned	⊠ Abandoned shaft
Surface coal mine - abandoned	⊠ Active slope
Indefinite underground coal mine boundary - abandoned	⊠ Abandoned slope
Underground industrial mine and surrounding buffer region	⊠ Active drift
951, 951 Coal mine index number (polygon label, point label)	⊠ Abandoned drift
	▲ Underground industrial mine entrance or general location

**Map Explanation**

This map accompanies the coal mines directory for this county. Please consult the directory for an explanation of the coal mine information shown on this map. Buffer regions for industrial mineral underground mines were incorporated into this map due to limited information regarding these mines. The size of the buffer region is dependent on the uncertainty or inaccuracy of the mine location. For more information regarding industrial mines please contact the IGGIS Industrial Minerals Section.

The maps and digital files used for this study were compiled from data obtained from a variety of public and private sources and have varying degrees of completeness and accuracy. They present reasonable interpretations of the geology of the area and are based on available data. These data were compiled and digitized at a scale of 1:82,500. Locations of some features may be offset by 500 feet or more due to errors in the original source maps, the compilation process, digitizing, or a combination of these factors.

These data are not intended for use in site-specific screening or decision-making. Data included in this map are suitable for use at a scale of 1:100,000.

**Disclaimer**

The Illinois State Geological Survey and the University of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this data set and accept no liability for the consequences of decisions made by others on the basis of the information presented here.

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Probability of Future Mine Subsidence Events There are no reports or database of previous occurrences of mine subsidence in Jasper County. However, many local officials are concerned

that a large earthquake could disturb many of the abandoned mines and create a mine subsidence issue.

Local Vulnerability While there are many laws within the mining industry, coal mine subsidence was not federally regulated until 1977. Illinois State law is also in place to enforce the federal act and regulate subsidence from underground coal mining operations. With the increase of subsidence, these laws and regulations have become increasingly stringent. Illinois State law requires that active mines must submit a mine subsidence control plan, which is reviewed and approved by the Illinois Department of Natural Resources, Office of Mines and Minerals.

Future of Mining in Jasper County While there are currently no active mines in the County, there has been recent interest in a company leasing nearly 90,000 acres of land that could potentially be mined for coal. It is thought that a developer could mine the area and sell the high sulfur coal to the local power plant, Ameren CIPS, who burns coal for electricity distribution.

## **Severe Storm Hazard**

Description According to FEMA, about 10% of thunderstorms are classified as severe. To be classified as a severe thunderstorm it must be one that produces hail at least one inch in diameter, have winds of 58 miles per hour or higher or produce a tornado. Severe thunderstorms are capable of producing high winds, straight line winds, tornados, flash flooding, heavy amounts of rain and lightning. Warm, humid conditions are highly favorable for thunderstorm development.

Severe thunderstorms are defined as thunderstorms capable of producing winds of 58 mph or higher and/or hail 1 inch (quarter size) in diameter or greater. As of January 2010, the minimum hail size increased from  $\frac{3}{4}$  inch in diameter to 1 inch in diameter to classify as a severe thunderstorm. The change is based on research indicating significant damage does not occur until hail size reaches 1 inch in diameter, and as a response to requests by core partners in emergency management and the media.

### **Types of thunderstorms** (from the University of Illinois)

- Single Cell Storms: typically last 20-30 minutes. They can produce severe weather elements such as downbursts, hail, some heavy rainfall and occasionally weak tornados.
- Multicell Cluster Storms: a group of cells moving as a single unit, with each cell in a different stage of the thunderstorm life cycle. They can produce moderate size hail, flash floods and weak tornados.
- Multicell Line Storms: consist of a line of storms with a continuous, well developed gust front at the leading edge of the line. Also known as squall lines, these storms can produce small to moderate size hail, occasional flash floods and weak tornados.
- Supercells: defined as a thunderstorm with rotating updraft, these storms can produce strong downbursts, large hail, occasional flash floods and weak to violent tornados.

### **Lightning** (from FEMA)

- Lightning is unpredictable, which increases the risk to individuals and property.
- Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.
- Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.

### **Hail** (from the National Weather Service)

- Hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere.
- Hailstones grow by collision with super cooled water drops.
- Supercell thunderstorms support large hail formation by repeatedly lifting the hailstones into very cold air at the top of the thunderstorm. Multi-cell thunderstorms also produce many hail storms but usually not the largest hailstones.
- Hail causes \$1 billion in damage to crops and property each year across the U.S.

Predicting Severe Storms (from the National Weather Service)

- Severe thunderstorm watch- is issued when severe thunderstorms are possible in and near the watch area. It does not mean that they will occur. It only means they are possible.
- Severe thunderstorm warning-is issued when severe thunderstorms are occurring or imminent in the warning area.

Potential Areas Affected by Severe Storms Severe storms can occur anywhere in Jasper County. Some severe storms have been known to hit the entire County and some only affect different areas of the County at a time.

Previous Severe Storm Events in Jasper County Data since 1950 is available to reflect thunderstorm, high winds, and hail events in Jasper County. During the period from January 1950-April 30, 2010 a total of 62 thunderstorm and high wind events were recorded. Wind speed has ranged from 50 kts to 65 kts. A total of 37 hail events have also been documented. Hail size has ranged from 0.88 inches to 2.75 inches in diameter.

**Figure 27 Previous Severe Storm Events in Jasper County**

<b>Location</b>	<b>Date</b>	<b>Type</b>	<b>Magnitude</b>	<b>Comments</b>
Countywide	12/18/1957	Thunderstorm Wind	0 kts.	
Countywide	9/24/1961	Hail	1.75 inch	
Countywide	5/19/1975	Hail	1.75 inch	
Countywide	3/20/1976	Thunderstorm Wind	0 kts.	
Countywide	8/26/1983	Thunderstorm Wind	0 kts.	
Countywide	6/24/1985	Hail	2 inch	
Countywide	7/25/1986	Hail	1 inch	
Countywide	7/14/1988	Hail	1 inch	
Countywide	5/25/1989	Thunderstorm Wind	0 kts.	
Countywide	5/25/1989	Hail	2.75 inch	
Countywide	8/5/1989	Thunderstorm Wind	0 kts.	
Countywide	11/15/1989	Hail	0.88 inch	
Countywide	5/16/1990	Thunderstorm Wind	0 kts.	
Countywide	6/23/1992	Thunderstorm Wind	0 kts.	
Countywide	7/11/1992	Thunderstorm Wind	0 kts.	
Newton	4/15/1994	Thunderstorm Wind	0 kts.	\$500,000 in property damage
Ste Marie	4/26/1994	Thunderstorm Wind	0 kts.	\$1,000 in property damage
Northwestern Jasper County	5/24/1995	Thunderstorm Wind	0 kts.	\$50,000 in property damage
Countywide	3/25/1996	High Winds	0 kts	
Countywide	4/28/1996	High Winds	53 kts	
Island Grove	6/17/1996	Thunderstorm Wind	0 kts.	

Countywide	4/30/1997	High Winds	61 kts.	\$38,000 in property damage
Hunt City	6/21/1997	Thunderstorm Wind	0 kts.	
West Liberty	6/21/1997	Thunderstorm Wind	0 kts.	
Falmouth	7/14/1997	Thunderstorm Wind	0 kts.	
Countywide	6/29/1998	Thunderstorm Wind	0 kts.	
Newton	11/10/1998	Thunderstorm Wind	54 kts.	
Newton	5/5/1999	Thunderstorm Wind	0 kts.	
Newton	5/5/1999	Hail	0.75 inch	
Countywide	5/17/1999	Thunderstorm Wind	0 kts.	
Wheeler	6/1/1999	Thunderstorm Wind	0 kts.	
Newton	6/4/1999	Thunderstorm Wind	0 kts.	
Newton	4/7/2000	Hail	0.75 inch	
Newton	5/9/2000	Thunderstorm Wind	0 kts.	
Wheeler	5/12/2000	Thunderstorm Wind	0 kts.	
Newton	6/20/2000	Thunderstorm Wind	0 kts.	
Hidalgo	8/6/2000	Thunderstorm Wind	0 kts.	
Newton	8/26/2000	Thunderstorm Wind	0 kts.	
Ste Marie	4/10/2001	Hail	1.75 inch	Reports of broken windows
Newton	8/18/2001	Thunderstorm Wind	50 kts.	
Falmouth	10/24/2001	Thunderstorm Wind	52 kts.	
Newton	4/24/2002	Hail	1.75 inch	
Bogota	5/9/2002	Thunderstorm Wind	50 kts.	
Ste Marie	5/25/2002	Thunderstorm Wind	50 kts.	
Newton	6/11/2002	Thunderstorm Wind	50 kts.	
Ste Marie	6/27/2002	Thunderstorm Wind	50 kts.	
Ste Marie	6/27/2002	Hail	1.00 inch	
Ste Marie	7/9/2002	Thunderstorm Wind	50 kts.	
Newton	11/10/2002	Hail	0.75 inch	
Newton	3/20/2003	Thunderstorm Wind	52 kts.	
West Liberty	4/24/2003	Hail	1.75 inch	
Newton	5/8/2003	Thunderstorm Wind	55 kts.	
Newton	5/10/2003	Hail	0.75 inch	
Falmouth	9/26/2003	Thunderstorm Wind	55 kts.	
Newton	5/27/2004	Thunderstorm Wind	65 kts.	
Wheeler	5/27/2004	Hail	1.00 inch	
Bogota	5/27/2004	Hail	1.75 inch	
Rose Hill	5/30/2004	Thunderstorm Wind	50 kts.	
Countywide	5/30/2004	Thunderstorm Wind	60 kts.	
Newton	5/31/2004	Thunderstorm Wind	50 kts.	
Newton	3/30/2005	Hail	1.00 inch	
Newton	5/13/2005	Thunderstorm Wind	50 kts.	
Yale	5/13/2005	Hail	1.00 inch	
Newton	6/8/2005	Thunderstorm Wind	50 kts.	

Newton	6/24/2005	Hail	0.75 inch	
Yale	7/26/2005	Thunderstorm Wind	50 kts.	
Newton	4/2/2006	Thunderstorm Wind	65 kts.	\$70,000 in property damage
Ste Marie	4/2/2006	Thunderstorm Wind	52 kts.	
Wheeler	4/16/2006	Hail	1.75 inch	
Hidalgo	4/16/2006	Hail	1.75 inch	
Newton	4/18/2006	Hail	1.75 inch	
Wheeler	4/18/2006	Hail	1.00 inch	
Newton	5/24/2006	Thunderstorm Wind	55 kts.	
Ste Marie	6/26/2006	Hail	1.50 inch	
Hidalgo	8/3/2006	Thunderstorm Wind	52 kts.	
Willow Hill	8/10/2006	Thunderstorm Wind	55 kts.	
Yale	4/3/2007	Hail	0.88 inch	
Wheeler	8/24/2007	Thunderstorm Wind	61 kts.	1 injury and \$26,000 in property damage
Wheeler	10/18/2007	Thunderstorm Wind	61 kts.	\$15,000 in property damage
Newton	1/29/2008	Thunderstorm Wind	52 kts.	\$5,000 in property damage
Gila	2/5/2008	Thunderstorm Wind	61 kts.	\$121,000 in property damage
Kedron	6/9/2008	Hail	0.88 inch	
Newton	6/15/2008	Hail	0.75 inch	
Newton	6/21/2008	Thunderstorm Wind	56 kts.	\$12,000 in property damage
Hidalgo	6/21/2008	Hail	1.50 inch	
Hidalgo	6/21/2008	Hail	0.75 inch	
Newton	6/21/2008	Hail	0.75 inch	
Falmouth	6/21/2008	Hail	1.00 inch	
Ste Marie	6/27/2008	Thunderstorm Wind	61 kts.	\$82,000 in property damage
Hidalgo	7/12/2008	Thunderstorm Wind	52 kts.	\$2,000 in property damage
Newton	7/12/2008	Thunderstorm Wind	52 kts.	\$15,000 in property damage
Newton	6/18/2009	Thunderstorm Wind	52 kts.	\$50,000 in property damage
Boos	6/21/2009	Thunderstorm Wind	52 kts.	\$345,000 in property damage
Ste Marie	6/21/2009	Thunderstorm Wind	52 kts.	\$45,000 in property damage
Gila	6/21/2009	Hail	0.88 inch	
Newton	6/21/2009	Hail	1.00 inch	

Newton	6/21/2009	Hail	1.75 inch	
Newton	6/21/2009	Hail	2.00 inch	
Newton	4/7/2010	Hail	0.88 inch	

While no deaths or injuries have been reported, the effects of severe thunderstorms are very dangerous. Across Jasper County the most prevalent effects of severe thunderstorms are widespread power outages, downed tree limbs and sometimes downed power lines. Depending on winds speed, residential and businesses have had roofs blown off. Grain bins, machine sheds and other agricultural buildings have reported damage as well. Depending on hail size broken windows of Jasper County residents have been reported.

Probability of Future Severe Thunderstorm Events During the past 60 years for which data is available, there have been a total of 62 thunderstorm wind/high wind events. This indicates a 100% chance of Jasper County having a thunderstorm wind/high wind event occur in any given year. For the same 60 year period, a total of 37 hail events have occurred throughout the county which indicates a 62% chance of a hail event occurring in any given year. Additionally, data shows that during the past 10 years alone there have been a total of 66 severe thunderstorm events occur in Jasper County.

Local Vulnerability All structures and residents within Jasper County are vulnerable to severe thunderstorm events. Severe thunderstorms can produce lightning, hail, high winds, and torrential rain, which can cause damage in a variety of ways. The following are examples of local vulnerability and their relationship to the effects of a severe thunderstorm:

- **Lightning:** can strike any person, who is outside, at any time during a severe thunderstorm without warning. It has the capability to kill with one strike. Lightning can also cause fires to structures such as homes, businesses and critical infrastructure or wooded and brushy areas.
- **Hail:** doesn't occur with every severe thunderstorm event, but severe thunderstorms do have the potential of producing hail ranging from dime size to golf ball size or larger. Any person outside during a severe thunderstorm is in danger of being struck with falling hail. Generally not life threatening, hail can still cause head injuries, depending on the size of the falling hail. The most common effect of hail is the economic impact caused due to damage to structures (most commonly broken windows and damaged roofs), dented vehicles and crop loss.

## **Tornado Event**

Description (from FEMA) Tornadoes are nature's most violent storms. Spawned from powerful thunderstorm, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado

appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hours. Damage paths can be in excess of one mile wide and 50 miles long.

Some tornados are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornados develop so rapidly that little, if any, advanced warning is possible.

Before a tornado hits, the winds may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornados generally occur near the trailing edge of a thunderstorm.

The following are facts about tornados:

- They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- The average tornado moves southwest to northeast, but tornados have been known to move in any direction.
- The average forward speed of a tornado is 30 mph, but may vary from stationary to 70 mph.
- Waterspouts are tornados that form over water.
- Tornados are most frequently reported east of the Rocky Mountains during the spring and summer months.
- Tornados are most likely to occur between 3 p.m. and 9 p.m., but can occur at any time.

**Figure 28 Illinois Tornados since 1981 (from Illinois State Climatologist Office)**

YEAR	NUMBER OF EVENTS	DEATHS	INJURIES
2009	52 (as of October 22)	0	5
2008	47	0	11
2007	23	0	3
2006	124**	1	49
2005	19	0	0
2004	80	9	23
2003	120	2	82
2002	35	4	64
2001	21	0	3
2000	55	0	8
1999	64	3	29
1998	99	0	27
1997	29	0	3
1996	62	1	80

1995	76	0	80
1994	20	0	0
1993	34	0	0
1992	23	0	2
1991	32	0	23
1990	50	30	365
1989	15	0	56
1988	20	0	6
1987	22	0	2
1986	22	0	12
1985	15	1	11
1984	34	1	20
1983	14	2	43
1982	35	13	287
1981	33	1	48
1980	14	0	7

\*\*new record for Illinois

Measuring Tornadoes (from NCDC) The Fujita tornado scale is used to measure the intensity of tornadoes, which was developed in 1971 by Dr. Theodore Fujita. This scale is commonly referred to as the *Original Fujita Tornado Scale*. It composed of a six-category scale to classify tornadoes into six damage categories called F0-F5. F0 refers to the weakest tornado, while F5 refers to the most destructive tornado. The Fujita scale has been used to estimate tornado wind speeds based upon damage caused by the tornado.

After devastating tornadoes in Texas in 1997 and Oklahoma in 1999, many engineers, emergency managers and meteorologists felt that the wind estimates in the original Fujita tornado scale were too high. Problems with the original Fujita tornado scale were:

- Rankings are subjective and based solely on the damage caused by a tornado
- Difficult to apply with no damage indicators (if a tornado hits no structures, large trees, etc.)
- No account of construction quality and variability
- Subject to biases of the surveyors
- No definitive correlation between damage and wind speed

In 2004 an *Enhanced Fujita Scale* or EF-scale was developed by Texas Tech University. In addition to improving the ranking process, it was essential to the development team that the new EF-scale support and be consistent with the original F-scale. The EF-scale documentation includes additional enhanced descriptions of damage to multiple types of structures and

vegetation with photographs, a PC-based expert system and enhanced training materials. In 2007 the *Enhanced Fujita Scale* replaced the *Original Fujita Scale* in all tornado damage surveys in the U.S.

**Figure 29 The Enhanced Fujita Tornado Scale**

FUJITA SCALE			OPERATIONAL EF-SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85
1	73-112	79-117	1	86-110
2	113-157	118-161	2	111-135
3	158-207	162-209	3	136-165
4	208-260	210-261	4	166-200
5	261-318	262-317	5	Over 200

Predicting Tornadoes Today’s technology has made it easier to predict tornadoes within a storm, but the exact location and intensity of the tornado is still unpredictable. The use of Doppler radar has increased chances of predicting a tornado by indicating rotation within a storm. This has led to increased warning time for communities.

- Tornado Watch-Tornadoes are possible. Remain alert for approaching storms.
- Tornado Warning-A tornado has been sighted or indicated by weather radar. Take shelter immediately.

Potential Areas Affected by Tornadoes All of Jasper County and the surrounding region is vulnerable to tornadoes. According to the NCDC there is an average of 33 tornadoes each year in Illinois.

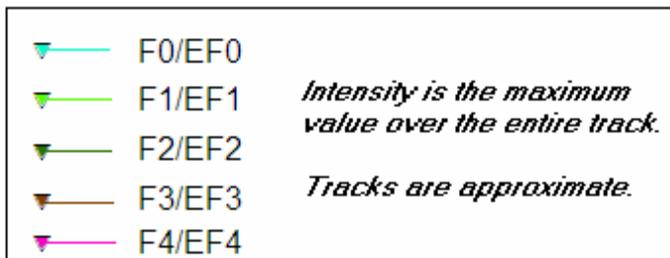
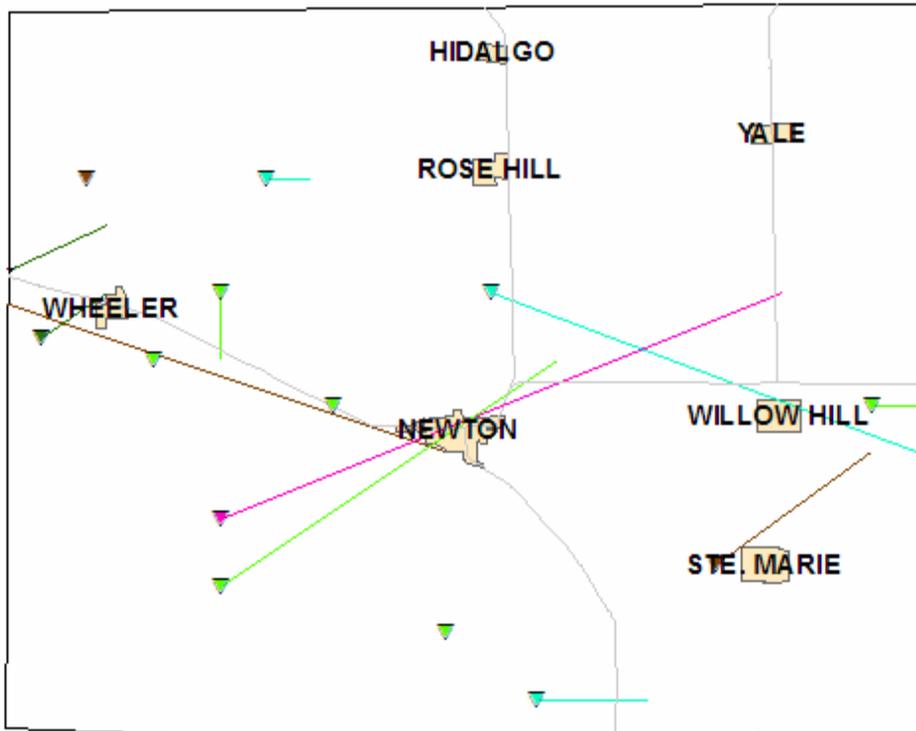
Previous Tornadoes in Jasper County Data since 1950 is recorded regarding occurrences of tornadoes in Jasper County. A total of 13 tornadoes have been recorded in Jasper County.

**Figure 30 Previous Tornadoes in Jasper County**

<b>Location</b>	<b>Date</b>	<b>Time</b>	<b>Magnitude</b>	<b>Amount of Damage</b>	<b>Injuries</b>	<b>Comments</b>
Ste. Marie	12/18/1957	5:25 pm	F3	\$25,000	0	Four farms damaged
Newton	5/30/1974	5:27 pm	F1	\$3,000	0	
Island Grove	8/10/1974	3:35 pm	F3	\$25,000	0	A church was destroyed
West Liberty	3/20/1976	2:30 pm	F0	\$25,000	0	
Newton	4/12/1984	6:35 pm	F1	\$250,000	1	
Dieterich	5/19/1989	4:00 pm	F1	\$25,000	0	
Newton	6/2/1990	5:07 pm	F4	\$250,000	6	13 mile tornado track with 9 homes destroyed. Resulted in Federal Disaster Declaration #871
Jasper County	6/2/1990	5:20 pm	F1	\$25,000	0	
Falmouth	5/8/1996	1:01 pm	F0	\$0	0	Damage to 1 home and barn, later touched down at Willow Hill and destroyed a home
Rose Hill	6/1/1999	8:36 pm	F0	\$0	0	Damage to a mobile home
Wheeler	5/10/2003	10:00 am	F1	\$15,000	0	Damage to roofs on two homes
Newton	11/15/2005	3:15 pm	F1	\$0	0	11 outbuildings and 3 homes damaged
Wheeler	4/16/2006	4:18 pm	F2	\$0	0	Mobile home damaged

**Figure 31**

## Jasper County Tornadoes, 1950-2009



No deaths in Jasper County have been officially reported, but a total of 7 injuries have occurred as a result of a tornado. However, local residents do recall the June 2<sup>nd</sup>, 1990 tornado claiming a life at the local motel. Historical data also revealed that a major tornado in 1922 claimed one life

as well. The majority of the tornados that have touched down have been in the afternoon and early evening hours, not late at night, which may have contributed to the lack of injuries and deaths.

Probability of Future Tornados According to historical data, the probability of a tornado touching down in Jasper County is 22% in any given year. The strongest tornado reported in the County was in 1990 when a F4 (winds at 166-200 mph) struck and 6 people were injured. While nearly 50% of the reported tornados have been F1 magnitude, F5 tornadoes have been reported in Illinois and are possible in Jasper County.

Local Vulnerability All persons and property in Jasper County are vulnerable to receiving damage from tornados. While 85% of the tornados in the County have caused less than \$25,000 or less in damages, a tornado can damage a business or critical infrastructure at any given time. Economic losses from a tornado can include damage to the property, hours spend cleaning up the business and rebuilding if necessary, which all result in loss of revenue for the business and community. Additionally, if a tornado was to hit the main power or water source for the City of Newton, businesses, schools and government could be shut down for days.

## **Winter Storm Hazard**

Description Winter storms in Jasper County consist of snow, freezing rain, sleet, wind and wind chill. Winter storms cause traffic accidents, power outages, downed trees and power lines, personal injury and structural problems, such as roof collapses. According to FEMA and the American Red Cross, 70% of injuries related to snow and ice are from vehicle accidents.

### **Heavy Snow**

Accumulations of snow can cause roofs to collapse, downed power lines and trees and immobilize people and livestock. Snow fall is measured in inches but has been recorded over 1 foot in Jasper County. Winds accompanying snow can cause whiteout conditions, which make travel nearly impossible. Additionally, winds can cause snow drifts which can cause roads to be closed.

- Snow Flurries: light snow falling for short durations with little or no accumulation.
- Snow Showers: snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- Snow Squalls: brief, intense snow showers accompanied by strong winds. Accumulation may be significant.
- Blowing Snow: wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- Blizzard: winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ miles for at least 3 hours.

### **Ice, Freezing Rain, and Sleet**

Often times, in Jasper County, frozen precipitation such as freezing rain or sleet occurs before snow fall. Freezing rain occurs when frozen precipitation melts in the warm air, then the rain falls and freezes on cold surfaces as a sheet of ice. Sleet occurs when frozen precipitation melts then refreezes into sleet (small ice pellets) before hitting the ground.

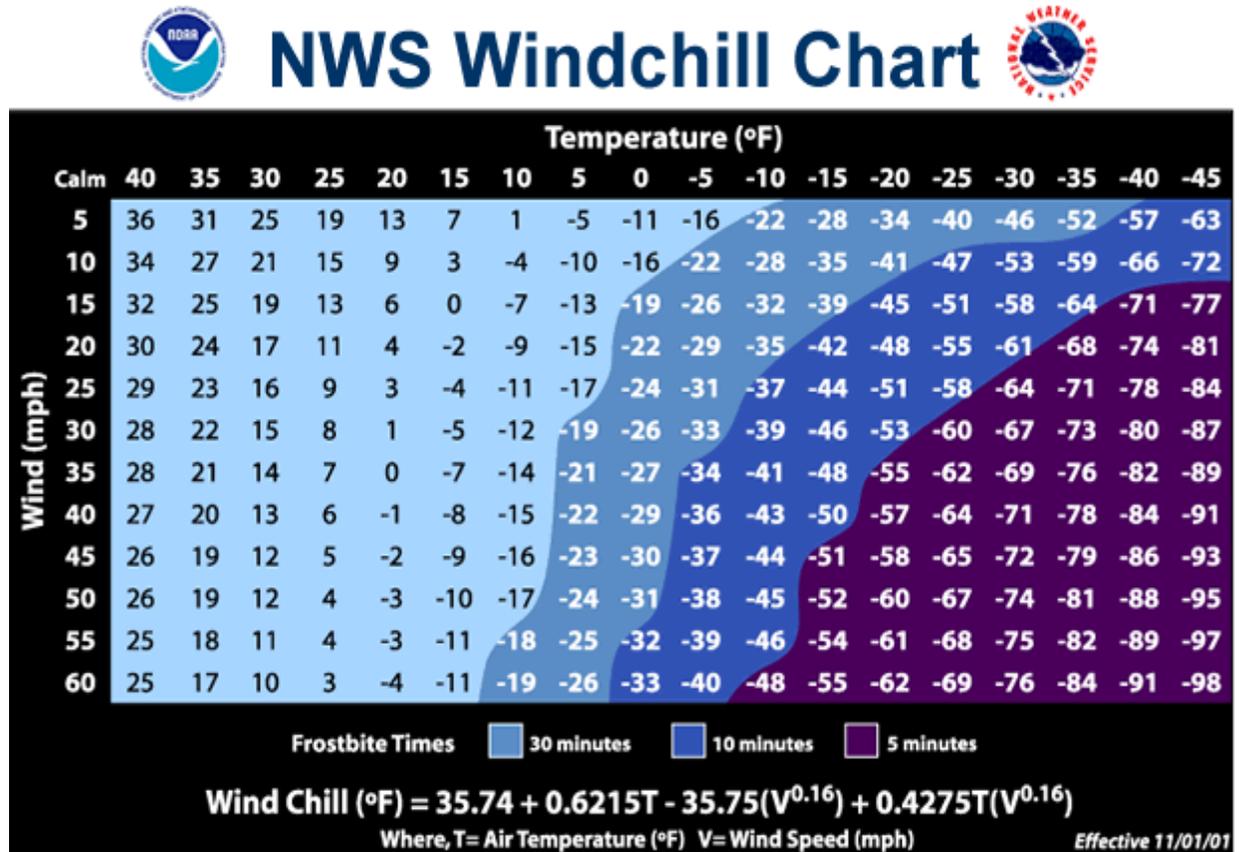
Accumulations of ice can bring down trees, large limbs and power lines, which can result in power outages, especially in rural areas of Jasper County. Even small amounts of ice on roadways can result in dangerous driving conditions. Bridges and overpasses are most dangerous as they freeze before other roadways.

### **Extremely Cold Temperatures**

Many times extremely cold temperatures coming from bitterly cold Canadian winter storm systems are associated with snow storms. Exposure to extreme cold can cause frostbite or hypothermia to people, pets and livestock. Those at greatest risk are the elderly and infants. According to FEMA and the Red Cross, 50% of cold related injuries occur to people over 60 years of age.

Windchill is often referred to when characterizing extremely cold winter temperatures. Windchill is not the actual temperature but is how wind and cold feel on exposed skin. As wind increases, heat is carried away from the body at an increased rate driving down the body temperature. All people and animals are affected by wind chill. Below is the chart used to measure windchill.

Figure 32



Predicting Winter Hazard Events Meteorologists study various weather patterns, jet streams and cold/warm fronts during the winter months to aid them in predicting winter weather events. In Jasper County, it is common to face bitter temperatures and windchills when cold air moves into the region from Canada. The following advisories and warnings are issued when winter weather is approaching:

- **Winter Storm Outlook** - storm conditions are possible in the next 2-5 days.
- **Winter Storm Watch** - storm conditions are possible within the next 36-48 hours.
- **Winter Weather Advisory** - weather conditions may be hazardous.
- **Winter Storm Warning** - severe winter conditions have begun or will begin within 24 hours.

Potential Areas Affected by Winter Hazard Events Winter storms and related winter weather events can occur anywhere in Jasper County and the surrounding region. Figure 33 shows snowfall averages for Jasper County.

**Figure 33 Normal Snowfall for Jasper County (NWS at Lincoln, IL)**

October	0.1 inch
November	0.6 inch
December	3.4 inches
January	3.8 inches
February	3.2 inches
March	2.2 inches
Annual	13.2 inches

**Figure 34 Average Number of Days with Snow Fall in Jasper County (NWS at Lincoln, IL)**

Average number of days with snow >1 inch	4 days per year
Average number of days with snow 1-2 inches	2 days per year
Average number of days with snow 2-4 inches	2 days per year
Average number of days with snow 4-6 inches	once every other year
Average number of days with snow > 6 inches	once every 3-4 years

Previous Winter Hazard Events According to the National Weather Service, a total of 16 winter storm events have occurred in Jasper County since 1950. The highest annual total snow fall amount is 34.1 inches recorded in 1995-96 and 2002-03. The highest snow fall total for a snow storm is 10.5 inches recorded in Ste. Marie on March 20-21, 1996.

**Figure 35 Previous Winter Storm Events in Jasper County**

Location	Date	Type	Comments
Jasper County	3/8/1994	Heavy Snow	Up to 12 inches of snow received
Jasper County	1/2/1996	Winter Storm	Up to 8 inches of snow received with 30-40 mph winds
Jasper County	1/4/1996	Winter Storm	Just 2 days after the previous snow event, county received an additional 2-7 inches of snow
Jasper County	1/18/1996	Winter Storm	60 degree drop in temperature over 12 hour period resulted in thunderstorms that changed to ice and snow with wind chill temperatures near negative 40 degrees
Jasper County	3/19/1996	Winter Storm	Up to 11 inches of snow received with blowing and drifting snow
Jasper County	1/8/1997	Heavy Snow	Up to 11 inches of snow received
Jasper County	1/15/1997	Winter Storm	Freezing rain, sleet and 1-3 inches of snow received. Winds of 20-30 mph caused whiteout

			conditions with windchills near negative 40 degrees
Jasper County	1/26/1997	Winter Storm	1-5 inches of snow received
Jasper County	11/13/1997	Winter Storm	3-5 inches of snow received
Jasper County	1/1/1999	Winter Storm	Ice, sleet and snow with bitter windchill
Jasper County	12/13/2000	Heavy Snow	6 inches of snow received
Jasper County	12/24/2002	Heavy Snow	6-8 inches of snow received
Jasper County	1/25/2004	Ice Storm	Significant ice received, multiple trees and power lines reported down
Jasper County	12/22/2004	Winter Storm	8-12 inches of snow received with reported drifts in an excess of 3 feet
Jasper County	1/26/2009	Heavy Snow	8-12 inches of snow received

Probability of Future Winter Hazard Events During the past 60 years, a total of 16 winter hazard events have occurred in Jasper County. This indicated that there is a 27% chance in any given year that Jasper County will receive some kind of winter related event.

Local Vulnerability All structures, residents and animals in Jasper County are vulnerable to winter hazard events. Freezing temperatures combined with windchill can affect residents and animals outdoors with frost bite and hypothermia. Snow can cause multiple problems. Wet, heavy snow can become too heavy for roofs and cause them to cave in and collapse. Dry, light snow combined with wind can cause hazardous white out conditions and drifting of the snow. Additionally, ice can cause power lines to break leaving residents and businesses without power. Ice can also accumulate on road ways making driving hazardous and costing the community numerous dollars in salt and other de-icing techniques.

# Mitigation Strategy

## **Mitigation Strategy Description**

Natural hazard mitigation is a tool used to reduce and, when possible, eliminate risks to residents, property, and livestock. The overall goal of natural hazard mitigation is to build disaster resistant communities. Natural hazard mitigation strategies correspond with information and data obtained regarding risk and vulnerability assessment. Mitigation is a community wide effort that takes years and multiple resources to complete based on the needs of the community.

## **Hazard Mitigation Goals**

A Planning Committee group discussion regarding hazard mitigation goals was held after reviewing the risk assessment data association with each natural hazard identified in the Jasper County Hazard Mitigation Plan. Additionally, items such as the capability assessment, citizen survey, critical facilities, and socioeconomic data were used in developing hazard mitigation goal. Planning Committee members were asked to identify several mitigation goals, objectives, and activities specific to their area of expertise. Small group meetings were also conducted to discuss and brainstorm mitigation ideas.

Following guidance from the state hazard mitigation plan, the Planning Committee developed hazard mitigation goals based around the 6 broad categories of prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. The following hazard mitigation goals were approved at the Planning Committee meeting:

- Goal 1: Protect the life of residents and livestock in Jasper County from the impacts and effects of natural hazards.
- Goal 2: Protect existing and new infrastructure, including critical facilities, water supply, roads, and bridges, from the impacts and effects of natural hazards.
- Goal 3: Include and incorporate natural hazard mitigation in local government plans and regulations.

## **Hazard Mitigation Objectives**

Upon reviewing the mitigation goals, mitigation objectives were discussed by each Planning Committee member based on their area of expertise (for example emergency management,

public health, safety, etc.). Hazard mitigation objectives were defined as strategies that could be used to attain specific mitigation goals.

### **Hazard Mitigation Activities**

Planning Committee members were asked to identify hazard mitigation activities to support the mitigation goals and objectives. Planning Committee members emailed ideas to the plan facilitator. Small group meetings were also conducted with the plan facilitators and a Jasper County Board member and suggested members of the Planning Committee to identify hazard mitigation activities.

Each mitigation activity was prepared on a list, not prioritized or ranked, according to effected municipality and disaster. The Planning Committee reviewed the mitigation activity list and had open discussion about each activity, which resulted in additional mitigation activities being identified and added to the list.

The following is a list of the final mitigation goals, objectives, and activities:

### **Goals, Objectives, and Mitigation Activities**

#### **Goal 1: Protect the life of residents in Jasper County from the impacts and effects of natural hazards.**

*Objective 1.a. Establish adequate warning systems to alert the community to approaching natural hazard events.*

- Utilize 911 ALERT NOW system on all natural disasters – Jasper County
- Install early warning storm siren system – Ste. Marie
- Lightning awareness signs at outdoor recreational facilities – Jasper County
- Marquee sign with disaster related information located in a high traffic area – Jasper County Health Department
- Telephone on-hold messaging system – Jasper County Health Department
- Seek funding for distribution of weather radios for all residents – Jasper County
- Purchase repeaters for portable radios for the sheriff’s department – Jasper County

*Objective 1.b. Establish a facility where all emergency personnel can gather during a time of disaster or when a disaster is approaching.*

- Construct a 911 facility/emergency operations center that includes a disaster center for planning and carrying out disaster response – Jasper County

*Objective 1.c. Support programs that protect the elderly and special needs residents in the community*

- Expand volunteer programs for checking on citizens with handicaps or who are isolated – Jasper County and Newton
- Encourage voluntary neighbor check programs – Jasper County Health Department
- Get an exact number and location of the elderly and special needs residents in the community – Jasper County Health Department
- Education of caregivers to assist special needs residents – Jasper County Health Department

*Objective 1.d. Provide storm shelters/safe rooms for residents during a time of disaster such as tornado or severe storm*

- Construct an emergency equipment storage building with a community storm shelter – Jasper County and Wade Fire Department
- Utilize county office buildings for a storm shelter if possible – Jasper County
- Construction of storm shelters - Newton
- Construct accessibility ramp to the firehouse basement for a storm shelter, inspect and upgrade firehouse if needed – Jasper County

*Objective 1.e. Ensure proper signage on roadways and homes to ease emergency personnel response time during and/or after a disaster.*

- Require that all Jasper County residents have their 911 addresses displayed properly on their mail box – Jasper County
- Ensure that all existing road signs are correct (green signs) – Jasper County
- Purchase new road closed/high water signs that have barricades – Jasper County

*Objective 1.f. Educate residents and businesses on ways to protect themselves and their property from the effects of natural hazards*

- Create a County wide educational system for NFIP building codes, enforcement, and restrictions – Jasper County
- Educate local businesses on methods to protect their employees during a natural disaster – Jasper County
- Improve the information base regarding vulnerability and impacts of natural hazards – Newton
- Become a NWS storm ready community – Jasper County, Newton

- On jurisdictional websites provide online links to disseminate available information regarding natural hazard preparedness and mitigation measures including effective construction standards – Newton
- Adult education pertaining to natural hazard safety – Jasper County Health Department
- Education of county officials and residents of mine subsidence – Jasper County Health Department
- Educational materials for the public with regards to extreme temperatures (hot and cold) – Jasper County Health Department

*Objective 1.g. Assure water is available during a drought*

- Education for the public regarding water purification –Jasper County Health Department
- Develop a system/method to ensure that water is available during a drought - Newton

*Objective 1.h. Assure that power is available to critical services*

- Back up generator for health department vaccinations – Jasper County Health Department
- Emergency generator for the Newton Community High School and Grade School for temporary shelter and housing – Jasper County School District 12
- Back up generator for the City of Newton – Newton
- Continue protection of power lines by tree trimming – Jasper County
- Bury power lines to critical infrastructure – Jasper County

*Objective 1. i. Ensure the safety of residents during an extreme heat hazard*

- Designate cooling centers throughout the City – Newton

**Goal 2: Protect existing and new infrastructure, including critical facilities, water supply, road and bridges, from the impacts and effects of natural hazards**

*Objective 2.a. Establish measures to protect roads and bridges from flood hazards*

- Elevate the road North of Ste. Marie (1800 East County Rd 9) – Jasper County
- Township bridges need evaluated, updated, and possibly elevated – Jasper County
- Burl Ives bridge needs to be evaluated and possibly raised – Jasper County
- Road and bridge work in South Muddy Township/Laws Creek floodplain, bridge needs raised and proper culverts need to be put in place – Jasper County

- Improve drainage in the Beezer – Newton
- Construct retention ponds – Newton

*Objective 2.b. Establish measures to protect critical infrastructure and homes from flood hazards*

- Acquire flood damaged properties that are flooded repeatedly – Jasper County
- Purchase an airboat to be used for flood damage assessment and flood rescue – Jasper County Sheriff’s Department
- Evaluate mitigation measures to remove the waste water treatment system out of the floodplain – Ste. Marie
- Upgrade the water distribution system – Ste. Marie
- Update the flood map – Jasper County

*Objective 2.c. Become proactive with infrastructure upgrades to avoid potential impacts from natural hazards*

- Develop a schedule to monitor infrastructure conditions for needed maintenance – Newton and Jasper County

*Objective 2.d. Remove and/or limit roadway hazards during winter storm events*

- Apply anti-icing/de-icing substance to road surfaces prior to imminent ice storm – Jasper County

*Objective 2.e. Address known hazards pertaining to infrastructure and private property*

- Establish a protocol to address abandoned buildings that could become susceptible to natural hazards– Jasper County

**Goal 3: Include and incorporate natural hazard mitigation in local government plans and regulations.**

*Objective 3.a. Adopt regulations that protect buildings*

- Develop and pass Resolution for NFIP building – Jasper County
- Inventory all structures in the floodplain and short elevation areas – Jasper County
- Develop a land use plan – Jasper County
- Review local programs, ordinances, plans to determine how they can better address the impacts of natural hazards – Newton
- Adopt the latest building codes – Jasper County
- Participate in the community rating system (CRS) for reduced flood insurance premiums through NFIP – Jasper County

*Objective 3.b. Include residents located in unincorporated areas of the community in county mitigation, disaster, land use planning*

- Develop a plan for unincorporated areas with large clusters of residents, such as subdivisions, for responding to natural disasters – Jasper County

*Objective 3.c. When updating or creating new plans include mitigation activities*

- Include mitigation in all comprehensive plans – Newton
- Review of all disaster related plans (prevention and response) such as emergency management, Sheriff’s Department, Health Department, Fire Departments – Jasper County
- Put all disaster plans on a computer and allow access to each agency as appropriate – Jasper County

*Objective 3.d. Support policy development that identifies mitigation goals, objectives, and activities.*

- Expand use of 911 between agencies-policy development issue – Jasper County
- Expand the relationship between the local levee districts and the Army Corp of Engineers – Jasper County

### **Mitigation Actions-Priorities**

The Jasper County Hazard Mitigation Planning Committee used a project prioritization method to help decide which mitigation projects need the most immediate attention. To help prioritize the mitigation activities, the planning committee first ranked the natural hazards in the Jasper County Hazard Mitigation Plan. Based on committee discussion natural hazards were ranked in the following order with 1 being of the most concern:

1. Flooding (F)
2. Severe Thunderstorms including lightning, hail, and high winds (SS)
3. Tornado (T)
4. Severe Winter Storms including snow, ice, and high winds (WS)
5. Earthquake (E)
6. Extreme Temperatures including extreme heat and extreme cold (ET)
7. Drought (D)
8. Other-Mine Subsidence (MS)

Next the committee researched project prioritization methods and decided to use the A,B,C,J method:

**Priority A Projects:** this category includes projects that permanently eliminate property damages and/or injury and death. Priority A projects are located in specific areas. Priority A projects will contain the most significant hazards first such as flooding, severe thunderstorms, and tornados.

**Priority B Projects:** this category includes projects that reduce property damages and/or injury and death. These projects are located in wide spread areas, non specific. Priority B projects will contain the most significant hazards first such as flooding, severe thunderstorms, and tornados.

**Priority C Projects:** this category includes projects that reduce property damage and/or injury and death from less significant hazards. Projects in this category are mostly considered educational.

**Priority J Projects:** this category includes projects that can be done at any time without funding or with very little local funding. Projects in this category mostly contain policy development issues regarding natural hazard mitigation.

### **Cost/Benefit Analysis**

Before any mitigation project or activity is completed, a cost/benefit analysis will need to be conducted by the implementing agency. The cost/benefit analysis can be performed at any given time before the project or activity has begun.

**Natural Hazard Mitigation Projects by Community – Prioritized**

<b>Community</b>	<b>Priority</b>	<b>Project</b>	<b>Implementing Agency</b>	<b>Funding Sources</b>	<b>Time Frame</b>	<b>Hazard</b>
Jasper Co.	A	Construct ramp to firehouse basement, inspect and upgrade if needed	Wade Fire Dept.	75% Federal 25% Local	3-5 years	ALL
Jasper Co.	A	Elevate road north of Ste. Marie (1800 E Co. Rd. 9)	Jasper Co.	75% Federal 25 % Local	3-5 years	F
Jasper Co.	A	Evaluate Burl Ives bridge, possibly elevate	IDOT	100% State	1-3 years	F
Jasper Co.	A	Road, bridge, culvert work in South Muddy township/Laws Creek area	South Muddy Township	75% Federal 25% Local	3-5 years	F
Jasper Co.	A	Construct a building for a new generator	Jasper Co. Health Dept.	75% Federal 25% Local	6 months	SS, T, E, WS
Jasper Co.	B	Lightning awareness signs	Jasper Co., Unit 1 School District, Newton	100% Local	2-3 years	SS
Jasper Co.	B	Distribution of weather radios to residents	EMA	100% Federal or State	1-3 years	ALL
Jasper Co.	B	Purchase repeaters for portable radios	Jasper Co. Sheriff's Dept	75% Federal 25% Local	1-3 years	ALL
Jasper Co.	B	Construct a 911 facility/emergency operations center	911/Jasper Co	75% Federal 25% Local	3-5 years	ALL
Jasper Co.	B	Construct an emergency equipment building/community storm shelter	Jasper Co.	75% Federal 25% Local	3-5 years	ALL
Jasper Co.	B	Purchase new road closed/high water signs that have barricades	Jasper Co. and Townships	75% Federal or State 25% Local	2-3 years	F
Jasper Co.	B	Become a NWS storm ready community	EMA	Local	ongoing	ALL
Jasper Co.	B	Tree trimming for protection of power lines	Ameren and Norris Electric	Local	ongoing	SS, T, WS
Jasper Co.	B	Evaluate township bridges	Townships	Local	1 year	F
Jasper Co.	B	Update/elevate township bridges as needed	Townships	75% Federal 25% Local	3-5 years	
Jasper Co.	B	Acquire repeatedly flooded properties/structures				F
Jasper Co.	B	Update the flood map	FEMA, Army Corps of	FEMA	3-5 years	F

			Engineers			
Jasper Co.	B	Apply anti-icing substance to roads prior to imminent ice storm	Jasper Co., Newton, Townships, State	Local and State	As Needed	WS
Jasper Co.	B	Develop a land use plan	Jasper Co.	Local	3-5 years	F, E, MS
Jasper Co.	B	Participate in CRS	Jasper Co.	Local	ongoing	F
Jasper Co.	B	Develop disaster response plans for unincorporated areas of community with clusters of residents	Jasper Co.	Local	2-3 years	ALL
Jasper Co.	B	Purchase an airboat for flood evaluation and rescue	Jasper Co. Sheriff's Dept.	75% Federal 25% Local	1-3 years	F
Jasper Co.	B	Develop a disaster plan database accessible by appropriate agencies within the county	Multi (sheriff's dept., county, EMA, etc.)	Local	ongoing	ALL
Jasper Co.	C	Create educational system for NFIP building codes, enforcement, and restrictions	Jasper Co.	Local	6 months-1 year	F
Jasper Co.	C	Educate businesses on disaster preparedness	EMA	Local	ongoing	ALL
Jasper Co.	C	Adult education regarding natural hazards safety	Jasper Co. Health Dept. and EMA	Local	ongoing	ALL
Jasper Co.	C	Education of mine subsidence	Jasper Co. Health Dept and EMA	Local	ongoing	MS
Jasper Co.	C	Distribution of educational material regarding extreme temperature safety tips	Jasper Co. Health Dept and EMA	Local	ongoing	ET
Jasper Co.	C	Distribution of educational material regarding water purification	Jasper Co. Health Dept and EMA	Local	ongoing	F, D
Jasper Co.	J	Expand relationship between levee districts and Army Corp of Engineers	Levee Districts	Local	ongoing	F, E
Jasper Co.	J	Utilize 911 ALERT NOW system	Multi (sheriff's dept, EMA, Jasper Co., etc.)	Local	ongoing	ALL
Jasper Co.	J	Volunteer programs for neighborhood checks	CERT program	Local	ongoing	ALL
Jasper Co.	J	Utilize county buildings for storm shelters where possible	Jasper Co.	Local	1-3 years	ALL
Jasper Co.	J	911 address displayed on all	911	100% State	6	ALL

		mailboxes			months-1 year	
Jasper Co.	J	Ensure that existing road signs are correct (green signs)	Jasper Co.	Local	ongoing	ALL
Jasper Co.	J	Monitor infrastructure conditions	Multi Agency	Local	ongoing	ALL
Jasper Co.	J	Inventory of structures in flood plain or other low lying areas prone to flooding	EMA	Local	1-3 years	F
Jasper Co.	J	Purchase a portable marquee sign to use as a communication tool for disaster related information	Jasper Co. Health Dept.	100% Federal or State	1-2 years	ALL
Jasper Co.	J	Telephone on-hold messaging system	Jasper Co. Health Dept.	Local	6 months	ALL
Jasper Co.	J	Education to caregivers for special needs residents during a time of disaster	Jasper Co. Health Dept.	Local	ongoing	ALL
Newton	A	Generator for schools	Jasper Co. School District 1	75% Federal 25% Local	3-5 years	ALL
Newton	A	Construction of storm shelters	City	75% Federal 25% Local	3-5 years	SS, T, WS
Newton	A	Purchase of a back up generator	City	Local	2-3 years	SS, T, WS, E
Newton	A	Construct retention ponds along the Beezer	City	75% Federal 25% Local	3-5 years	F
Newton	B	Become a NWS storm ready community	City	Local	ongoing	ALL
Newton	B	Purchase new road closed/high water signs with barricades	City	Federal or State	2-3 years	F
Newton	B	Tree trimming for protection of power lines	City	Local	ongoing	SS, T, WS
Newton	B	Acquire repeatedly flooded properties/structures	City	Federal	3-5 years	F
Newton	C	Ensure water is available during a drought	City	100% Federal	As needed	D, F
Newton	J	Designate cooling centers and warm shelters	City	Local	6 months-1 year	ET
Newton	J	Monitor infrastructure	City	Local	ongoing	SS, T, WS, E
Newton	J	Include mitigation in the comprehensive plan	City	Local	6 months-1 year	ALL
Ste. Marie	B	Evaluate the waste water system and upgrade if needed	Village	75 % Federal 25% Local	3-5 years	F

## **Plan Monitoring, Evaluation, and Updates**

The Jasper County Natural Hazard Mitigation Plan was developed to be used as a tool to identify mitigation measures and activities that can be completed to aid in the prevention of property loss, injury, and death to Jasper County residents. Each mitigation activity identified is subject to funding availability from local, state, and federal sources.

The Jasper County Local Emergency Planning Commission (LEPC), along with at least one representative from the Jasper County Board, City of Newton, and Village of Ste. Marie, will oversee the maintenance of the plan. The group will meet once or twice a year, depending on mitigation project activity and natural disaster activity. During the yearly maintenance meetings the group will evaluate the plan for completed mitigation activities and also update the plan as needed. Since the LEPC oversees and maintains other disaster and emergency related plans, it was decided to include the local hazard mitigation plan as well.

Every 5 years the plan will need to be re-approved and re-adopted by FEMA and the local jurisdictions. At this time, the original Planning Committee may want to form a group of meetings to make sure that the appropriate requirements are being met and maintained. Additionally, during the 5 year re-approval period, any previous nonparticipating jurisdiction may choose to participate depending on FEMA requirements such as NFIP participation.

Resolution No. \_\_\_\_\_

**Resolution of Support**

**A RESOLUTION AUTHORIZING APPLICATION BY THE COUNTY OF JASPER,  
ILLINOIS, TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR A  
HAZARD MITIGATION PLANNING GRANT.**

**Whereas**, Jasper County is applying to the Federal Emergency Management Agency (FEMA) for a Hazard Mitigation Planning grant to be applied toward the planning and development of a Hazard Mitigation Plan; and

**Whereas**, FEMA grant assistance would be essential to permit Jasper County to undertake the aforesaid project; and

**Whereas**, it is necessary that an application be made and agreements entered into with FEMA to secure the aforesaid grant; and

**NOW THEREFORE, BE IT RESOLVED BY THE COUNTY BOARD OF  
JASPER COUNTY, ILLINOIS**, as follows:

- 1) That Jasper County apply for a grant under the terms and conditions of the FEMA and shall enter into and agree to understanding and assurances contained in said application.
- 2) That the County Board Chair and County Clerk on behalf of the County execute such documents and all other documents necessary for the carrying out of said application.
- 3) That the County Board Chair and the County Clerk are authorized to provide such additional information as may be required to accomplish the obtaining of such grant.
- 4) This Resolution shall be in full force and effect from and after its passage and approval

**PASSED** by the County Board of Jasper County, Illinois, this 11 day of JUNE, 2009.

AYES 11  
NAYS 1  
ABSENT 0

Ed Mitchell  
Ed Mitchell, County Board Chair

ATTEST:  
Linda Huth  
Linda Huth, County Clerk

Resolution No. 10-1

Resolution of Support

**A RESOLUTION AUTHORIZING THE CITY OF NEWTON, ILLINOIS, TO PARTICIPATE IN THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR HAZARD MITIGATION PLAN.**

Whereas, the City of Newton will participate in a planning process and drafting of FEMA Hazard Mitigation Planning documents; and

Whereas, the City of Newton Mayor or appointed representative will serve on the Hazard Mitigation Planning Committee, participate in the necessary meetings, provide information needed for the plan, and act as a liaison between the Planning Committee and the City of Newton; and

Whereas, the City of Newton will receive and review the FEMA Hazard Mitigation Plan upon completion of the planning process

PASSED by the City of Newton, Illinois, this 16 day of Feb, 2010.

AYES Jeff Ford, David Brown, Bob Reisner, Larry Short,  
Scott Bloomberg, Harold Bolander

NAYS None

ABSENT

ATTEST:

  
Jean Ghast, City Clerk



  
Mark Bolander, Mayor

Resolution No. 2010-1

**Resolution of Support**

**A RESOLUTION AUTHORIZING THE VILLAGE OF SAINTE MARIE, TO PARTICIPATE IN THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S HAZARD MITIGATION PLAN.**

**Whereas**, the Village of Sainte Marie will participate in a planning process and drafting of FEMA Hazard Mitigation Planning documents; and

**Whereas**, the Village Board President or appointed representative will serve on the Hazard Mitigation Planning Committee, participate in the necessary meetings, provide information needed for the plan, and act as a liaison between the Planning Committee and the Village of Sainte Marie; and

**Whereas**, the Village of Sainte Marie will receive and review the FEMA Hazard Mitigation Plan upon completion of the planning process

**PASSED** by the Village of Sainte Marie, Illinois, this 25<sup>th</sup> day of March 2010.

AYES *Bruce E. Ochs, Brad Ochs, Frank C. Miller*  
NAYS *Jack Thompson, Joseph Boehl*

ABSENT

ATTEST:

*Annette Korte*

Village Clerk

*Bill Hartich*

Bill Hartich, Village Board President

2-4-2010

# County awarded \$34,000 FEMA grant

With assistance from the University of Illinois Extension, Jasper County has been awarded a \$34,000.00 grant from through the FEMA Hazard Mitigation Planning Grant.

The grant money will be used to develop a FEMA approved Natural Hazard Mitigation Plan. The plan will provide GIS analysis of risk assessment which will enable the county to establish mitigation strategies and goals. This information will be used as a proactive approach in avoiding losses from natural hazards such as tornados, flooding, and earthquakes. The plan will include Newton, St. Marie, and the unincorporated areas of Jasper County. Officials from Newton, St. Marie, Jasper County, University of Illinois Extension, Jasper County Co-op, Emergency Management, Sheriff's Department, and the Health Department will serve on the hazard mitigation Planning Committee. The plan is expected to take 8-12 months to complete.

A KickOff meeting regarding the Natural Hazard Mitigation Plan will be held Monday February 8th at 10:30 at the Jasper County Annex. The meeting is open to all Jasper County residents who are encouraged to share mitigation ideas with the Planning Committee. If you are interested in becoming involved in the plan, please call the University of Illinois Extension Office at 618-783-3409 or 618-783-2521 or email Larimore@illinois.edu.

**Jasper County Hazard Mitigation Plan  
Minutes from Risk Assessment (1) Meeting  
March 15, 2010 at the County Building  
10:30-11:30 a.m.**

The meeting began at 10:30 a.m. those in attendance were: Mayor Mark Bolander, Doug Long, Matt Tarr, Ed Mitchell, Linda Huth, Leah Miller, Phil Benefiel, Trisha Mason, Joel Clark, Bill Weber, Jim Weber, Ed Francis, Deborah Riddle, Tammy Ochs, and Ken Larimore.

Handouts of Jasper County natural disaster statistics and Illinois hazard rating by counties was given to each member.

An update was given from representatives of Newton and St. Marie. Mayor Mark Bolander reported that the City of Newton passed their Resolution of Support for their participation in the hazard mitigation plan. Matt Tarr stated that the Village of St. Marie is expected to pass their Resolution of Support at their next council meeting.

An explanation of risk assessment and the next step for developing the Jasper County Hazard Mitigation Plan was explained by Leah Miller. Miller stated that this section of the plan will be identifying where that hazard, such as flooding, will specifically affect unincorporated areas of Jasper County, the City of Newton, and Village of St. Marie. It was also noted that some hazards can not be pin pointed such as tornadoes and severe storms.

The Planning Committee reviewed the State's hazard ratings for Jasper County and discussed natural disaster statistics. The 7 most common natural hazards were identified as a group which are: floods (including flash flooding and storm water flooding), severe storms (including hail), tornados, extreme heat and cold temperatures, drought, and earthquakes. Mayor Mark Bolander commented that flooding of Beezer Creek in Newton has led to storm water drainage issues. Other potential flood issues are Muddy Creed in Wheeler, North Fork in Grandville Township, East Fork in Hunt City, and Lake Jasper Club (which has homes along it). There was also group discussion concerning Charleston Lake and its effect on Jasper County. Trisha Mason noted that she has a flood plan of Beezer Creek, which the Planning Committee will view at the next monthly meeting.

The Planning Committee decided to add an "other" category to the local plan. It will contain information and maps regarding mine subsidence. Options are being obtained in the area west of Newton and north of the Ameren Plan. The area subject to options is about 92,000 acres. Miller explained that it is acceptable to add this to the Jasper County Hazard Mitigation Plan and that Sangamon County included mine subsidence in their local hazard mitigation plan.

Miller also asked the question of if there are emergency storm sirens in the county. Doug Long explained that there are storm sirens, but due to reoccurring battery issues they are not working. Sheriff Ed Francis explained that there is a call system in the county to all land lines and some cell phones in the event of all emergencies including hazardous weather.

Trisha Mason explained the preliminary HAZUS inventory and creating the base map. Several members from the Planning Committee were assigned to gather data for the base map such as health care facilities, nursing homes, assisted living, schools, jail, and emergency operations center. Mason will meet with the county engineer/highway department in the near future to discuss roadways and bridges to be added to the base map. Also the 100 year and 500 year flood maps will be obtained and added to the HAZUS inventory.

Miller pointed out to the Planning Committee that there has not been very much public participation in the development of the plan. One reason of the lack of interest from the public could be that the flooding disaster was over 1 ½ years ago and there hasn't been a widespread disaster since. To increase public participation, which FEMA likes to see, a Citizen Survey will be created by Miller. The survey will ask questions regarding personal natural disaster experiences and concerns. The survey will be available online at Survey Monkey and paper copies will be distributed at the County Building, Newton City Hall, St. Marie Village Hall, Jasper County Chamber of Commerce building and monthly meeting, Rotary meeting, and several other locations. The availability of the survey will be released to the local news media and will be available for 3 weeks.

The next Planning Committee meeting will be held Monday April 19<sup>th</sup> at 10:30 at the County Building. The meeting will be based on a review of the base map and community inventory assets. The meeting was adjourned at 11:30.

*Minutes prepared by Leah Miller*

*[millerl@illinois.edu](mailto:millerl@illinois.edu)*

*618-943-5219*

April 6, 2010

**To all Residents of Jasper County, Illinois**

Dear Resident:

As part of a Federal Emergency Management Agency (FEMA) Hazard Mitigation Project being conducted in your community, you are being asked to complete this survey. The local Hazard Mitigation Planning Committee has developed this survey that asks questions regarding natural disasters, such as tornadoes, flooding, and severe storms. The responses collected in this survey will help local community leaders identify mitigation projects and goals. Examples for mitigation projects include proper storm sewer drainage, storm shelters, and flash flood control. The survey should only take approximately 5 minutes of your time. Your name is not needed on the survey and all responses will be collected and analyzed by the Jasper County Hazard Mitigation Planning Committee.

All surveys are to be completed and turned in by April 30. Surveys can be dropped off at the following locations: Jasper County Chamber of Commerce, University of Illinois Extension CED office, Newton City Hall, and the St. Marie Village.

If you have any questions regarding the survey or would like to join the Planning Committee please contact Ken Larimore at 618-783-3409 or email at [Larimore@illinois.edu](mailto:Larimore@illinois.edu)

Thank you for your time,  
Jasper County Hazard Mitigation Planning Committee

**1. Which of the following have you experienced as a result of flooding, including flash floods?**

- Which of the following have you experienced as a result of flooding, including flash floods? No damages or losses as a result of flooding
- Personal injury
- Property damage to farmland, crops, or livestock
- Property damage to home or garage
- Other (please specify) \_\_\_\_\_

**2. Which of the following have you experienced as a result of severe storms, including hail and wind damage?**

- Which of the following have you experienced as a result of severe storms, including hail and wind damage? No damage or injury as a result of severe storms
- Personal injury
- Other (please specify) \_\_\_\_\_
- Property damage to farmland, crops, or livestock
- Property damage to home or garage

**3. Which of the following have you experienced as a result of a tornado?**

- Which of the following have you experienced as a result of a tornado? No damage or injury as a result of a tornado
- Personal injury
- Other (please specify) \_\_\_\_\_
- Property damage to farmland, crops, livestock
- Property damage to home or garage

**4. Which of the following have you experienced as a result of extreme temperatures (i.e. extreme heat wave or subzero temperatures)?**

- Which of the following have you experienced as a result of extreme temperatures (i.e. extreme heat wave
- Property damage to farmland, crops, livestock

or subzero temperatures)? No damage or injury as a result of extreme temperatures

Personal injury

Other (please specify)

Property damage to home or garage

**5. Which of the following have you experienced as a result of severe winter storms (including snow, ice, & wind)?**

Which of the following have you experienced as a result of severe winter storms (including snow, ice, & wind)? No damage or injury as a result of severe winter storms

Personal injury

Other (please specify)

Property damage to farmland, crops, or livestock

Property damage to home or garage

**6. Do you own a home weather radio, if no where do you receive your emergency weather information?**

Do you own a home weather radio, if no where do you receive your emergency weather information?

**7. What actions do you think could be taken by the community to reduce damages and hardships caused by natural hazard events (such as tornadoes, floods, snow storms, etc.)?**

What actions do you think could be taken by the community to reduce damages and hardships caused by natural hazard events (such as tornadoes, floods, snow storms, etc.)?

\*

**8. When you bought/rented your home, did you consider the possible occurrence of any natural hazards? If yes please explain.**

When you bought/rented your home, did you consider the possible occurrence of any natural hazards? If yes please explain.

**9. What other ideas or issues should the Planning Committee address in developing this plan?**

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What other ideas or issues should the Planning Committee address in developing this plan?

**10. What community do you live in (if you live in unincorporated Jasper County, please state "unincorporated area")?**

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What community do you live in (if you live in unincorporated Jasper County, please state "unincorporated area")?

## Survey Results for the FEMA Natural Hazard Mitigation Plan Analyzed

A citizen survey was conducted during April and May 2010 for the Jasper County FEMA Hazard Mitigation Planning Committee. The results were compiled and reviewed during their May meeting.

The survey provided an opportunity for you, the citizens of Jasper County, to provide information on the areas you feel need the most attention with regards to natural hazard planning and preparedness. The survey inquired as to what personal experiences, if any, and damages resulted due to the following Natural Hazards: Flooding, Severe Storms, Tornado, Extreme Temperatures, Severe Winter Storm. As a result of the survey,

the following information was obtained: 1. The two major areas that Jasper County residents felt the most impact was property damage to farms and home including land and buildings. 2. Jasper County residents' primary method for obtaining weather related information is from TV/Radio or home weather radios.

The survey also allowed the opportunity for feedback from the citizens to provide us information that they felt needs addressed while developing the Jasper County Natural Hazard Mitigation Plan. Listed are a few comments that were added by the citizens: 1. The local warning system needs upgraded. 2. The current

(reverse) 911 calls are a big assistance. 3. A large shelter to house victims is needed.

These surveys were received from residents living in the following areas: Newton, Unincorporated Area, Jasper County, Ste. Marie. If you would like further details or are interested in becoming involved in the Jasper County Natural Hazard Mitigation Plan, please call the University Of Illinois Extension Office for Community and Economic Development at 618-783-3409. The meetings are open to all Jasper County residents. The next Planning Committee meeting is scheduled for Monday August 9th at 10:30 at the County Building.