

Natural Hazard Mitigation Plan

**BUREAU COUNTY, ILLINOIS
MARSHALL COUNTY, ILLINOIS
&
STARK COUNTY, ILLINOIS**

OCTOBER 2008

**PREPARED BY:
NORTH CENTRAL ILLINOIS COUNCIL OF GOVERNMENTS
PRINCETON, ILLINOIS**

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Executive Summary

Natural Disasters happen everywhere. No state is 100% safe from disaster. Community based mitigation promotes advanced preparation against disasters. Many people, homes, and businesses can reduce the effects of natural disasters by taking action before they happen.

The following, according to the Federal Emergency Management Agency (FEMA), are the four steps needed to begin a mitigation plan:

1. Building community partnerships
2. Identifying hazards and community vulnerability
3. Prioritizing hazards risk reduction actions
4. Communicating successes

For this Natural Hazard Mitigation Plan (NHMP), Bureau County, Marshall County, and Stark County created a partnership to better handle disaster in the area. The hazards were identified and the vulnerabilities were assessed. Ways to reduce damage from hazards were explored, community success stories were shared, and goals were drafted and prioritized.

Chapter 1: Introduction

This Natural Hazard Mitigation Plan addresses the dangers that nature can inflict upon a community and how to ease the harshness and pain in the aftermath of such hazards. A plan at the local level is helpful in addressing the needs of those who have the highest stakes, such as local officials and community members.

This plan was developed under the guidance of a mitigation committee with the help of North Central Illinois Council of Governments, 110 N. Main St., Princeton, IL 61356. The processes and the participants are listed within the chapter.

This plan fulfills the planning requirements for Federal mitigation funding programs, qualifies for Community Rating System (CRS) credit, and provides the Counties and the participating municipalities with a blueprint for reducing the impacts of the natural hazards on people and property.

Chapter 2: Hazard Profile

This NHMP addresses six major natural hazards that have or may affect Bureau, Marshall, and Stark Counties. The hazards that are addressed are:

Thunderstorms (which can produce lightning, hail, and tornados)
Winter Storms
Floods
Earthquakes
Drought
Extreme temperatures (heat/cold)

The following two hazards are addressed but unlikely to be a major issue in Bureau County, Marshall County or Stark County: Landslides and Wildfires.

This chapter identifies, explains, reviews and analyzes the above hazards. Statistical data was collected at the National, State, and local level where possible. All three counties have been affected by natural hazards, and they will always have risk of being affected by natural hazards.

Chapter 3: Vulnerability Assessment

This chapter reviews how vulnerable Bureau, Marshall, and Stark Counties are to the natural hazards discussed in chapter 2. The tables in the chapter show the potential damage from the natural hazards. Potential safety, health, economy, and building damages are explained for each of the hazards as well. The Critical Facilities within the three Counties are tabled, as are Repetitive Loss Properties.

Chapter 4: Preventive Measures

Preventive measures are to protect new and future construction from potential losses and damages. There are seven types of measures reviewed in this chapter:

1. Building Codes
2. Floodplain management
3. Manufactured housing regulations
4. Open space regulations
5. Planning and Zoning
6. Stormwater management
7. Subdivision Ordinances

Community Rating System credits are also discussed, not as a measure but as an incentive.

Chapter 5: Property Protection

There are measures suggested to reduce the damages that can be caused by hazards to properties. There are many options available depending on preference, budget, and location.

The Government's role is important because mitigation efforts need to be collaborated. Local governments need to care for and maintain their critical facilities to protect the public in case of emergency.

Insurance for the property is necessary for relief and assistance after damage occurs.

The following are approaches to property protection discussed in detail in this chapter.

1. Barriers can aid in keeping the hazard from reaching a building or property.
2. Relocating a building is moving it out of harm's way.
3. Retrofitting a building is modifying it to resist and withstand hazards.
4. Sewer backup Protection is modifying and maintaining sewer lines so they work properly.
5. Urban Forestry programs maintain and care for trees so they do not cause damage.

Community Rating System credits are also discussed.

Chapter 6: Emergency Management

Emergency management measures protect people before, during and after a hazard event. There are four stages to emergency management discussed in this chapter. The four stages are mitigation, preparedness, response, and recovery.

Threat recognition systems, as well as who tracks natural hazards are cited. Such items as the difference between weather *watch* and *warning* are addressed, and how to be informed, if possible, in a timely manner about an approaching disaster. Steps to responding to a disaster and steps to recovery after a disaster are covered in the chapter as well.

Chapter 7: Flood Control

Floods are the most common and widespread disaster in the nation. In this chapter, six items that can aid in the control of floods were addresses. They are as follows:

1. Channel Improvements
2. Dams and Reservoirs
3. Drainage System Maintenance
4. Ice Jam Prevention
5. Levees and Floodwalls
6. Sedimentation

The National Flood Insurance Program (NFIP) is discussed and how the communities stay compliant is charted. The number of buildings in each community floodplain is also listed as well.

Chapter 8: Public Information

Means to involve the public and keep the public involved are addressed in this chapter. Public involvement is an important component of hazard mitigation. For it to be successful community members must be involved and be made aware of what is happening around them.

Outreach projects, information outlets, assistance measures, and public information program strategies are reviewed. Knowing and planning ways to keep the public involved, and informing the public are necessary to make sure the plan works.

Chapter 9: Objectives and Plans

The goals and action plan for the Counties are laid out in the chapter. These objectives will better help the counties have a direction to follow in case of disaster. This NHMP will direct officials before, during, and after a natural hazard.

The duties of monitoring, evaluating, and updating the plan is reviewed in this chapter so the plan will stay current and be of use to the participating jurisdictions. A complete contact list is available at the end of the chapter.

Appendix A: Press Releases

Appendix B: News Article

Appendix C: Community Goals Exercise Worksheet

Appendix D: Survey given to participating communities at the beginning of the planning process

Appendix E: Participating Resolutions

Appendix F: Meeting sign-in sheets

Appendix G: NCICG Website with draft available to public

Appendix H: Charts containing historical natural disaster occurrences

Appendix I: 2007 Illinois Natural Hazard Mitigation Plan Methodology for Risk Assessment

Appendix J: Charts for Bureau, Marshall, & Stark Counties methodology

Appendix K: Community Floodplain Manager Contact Information

Appendix L: Action Items, Prioritization Method, and Community Selected Action Items

Acknowledgements:

Thank you to all the individuals and agencies that participated in the processes of creating this plan.

Glossary of Terms and Acronyms:

AFD – Additional Flood Data
BCEGS – Building Code Effectiveness Grading Schedule
BMP – Best Management Practices
BOCA – Building Officials and Code Administrators International Inc.
CDC – Center for Disease Control
CRS – Credit Rating System
CTP – Cooperating Technical Partners
DFIRM – Digital Flood Insurance Rate Map
DMA 2000 – Disaster Mitigation Act of 2000
EMA – Emergency Management Agency
ESDA – Emergency Services Disaster Agency
FCC – Federal Communication Commission
FEMA – Federal Emergency Management Agency
FMP – Floodplain Management Plan
HUD – Housing and Urban Development
ICBO – International Conference of Building Officials
ICC – International Code Council
IDNR – Illinois Department of Natural Resources
IEMA – Illinois Emergency Management Agency
IEPA – Illinois Environmental Protection Agency
ISO – Insurance Services Office
LDC – Land Development Criteria
LPL – Levee Protection Level
MPCI – Multi-peril Crop Insurance
NAP – Non-insured Crop Disaster Assistance Program
NFIP – National Flood Insurance Program
NHGP – Natural Hazards Grant Program
NHMP - Natural Hazards Mitigation Plan
NOAA - National Oceanic and Atmospheric Administration
NPDES – National Pollution Discharge Elimination System
NWR – National Weather Radio
NWS – National Weather Service
OSHA – Occupational Safety and Health Administration
PUD – Planned Unit Development
RLP – Repetitive Loss Properties
RMA – Risk Management Agency
SBCCI – Southern Building Code Congress International Inc.
SFHA – Special Flood Hazard Area
SLC – Sea-Level Conversion
SMP – Stormwater Management Master Plan
SMR – Stormwater Management Regulations
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USGS – United States Geological Survey

Chapter 1: Introduction

1.1 Background

Natural hazards affect every state. Certain hazards are more prominent in certain areas of the country, but not one state is completely immune to all hazards. There is a tendency to associate earthquakes with California and Alaska, while hurricanes tend to be associated with the south and southeastern coasts of the United States. There are, however, many other hazards, such as floods and drought, which affect much of the United States.



A Natural Hazard Mitigation Plan (NHMP) is a necessary component of emergency management. A NHMP can aid, through identification and assessment of natural hazards, to reduce and eliminate the loss to human life and damage to public and private property. For some hazards, warnings are available and for some hazards, no warning is available. NHMP's are long-term plans. They do not stop loss or damage from occurring. Natural disasters and hazards will continue to occur, the plan, however, is to help the community prepare for and cope with what nature will bring.

This NHMP is necessary because there are many ways to deal with natural hazards, both before and after they occur. This plan is to manage and mitigate, specifically, for Bureau County, Marshall County, and Stark County.

To have appropriate, effective, and efficient solutions to natural hazards, a well-prepared plan needs to be created, reviewed, and implemented through the best efforts of the community. Goals and activities need to be collaborated on and coincided with to mitigate hazards.

The Disaster Mitigation Act of 2000 (DMA 2000) is federal legislation that emphasizes and gives opportunity for state, tribal, and local governments to closely coordinate hazard mitigation planning and implementation efforts. This Act establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (NHGP). Local mitigation plans must demonstrate that the proposed mitigation measures are based on a solid planning process that accounts for the risks to and the capabilities of the community.

A mitigation plan is required for Federal mitigation funds under Section 104 of the DMA 2000 (42 USC 5165). Individual funds for mitigation will vary and plans need to be community specific to guide the mitigation funds and meet the prerequisite to receive funds from the Federal Emergency Management Agency (FEMA).

An Interim Final Rule was published in the Federal Register in 2002, which established the planning and funding criteria for states and local communities. For the plan to receive FEMA approval, all the criteria must get a satisfactory or greater score as well as be adopted by the governing bodies of the jurisdictions involved.

The NHMP addresses six natural hazards that could affect Bureau, Marshall, and Stark Counties. They are:

Thunderstorms (including lightning, hail, and tornados)	Winter Storms
Floods	Earthquakes
Drought	Extreme temperatures (heat/cold)

Landslides and wildfires are two hazards that are examined but the probability of occurrence is very unlikely.

This NHMP fulfills the Federal mitigation planning requirements, qualifies for Community Rating System credit, and provides Bureau County, Marshall County, and Stark County with an outline for reducing the impacts of natural hazards on people and property.

1.2 Planning Process

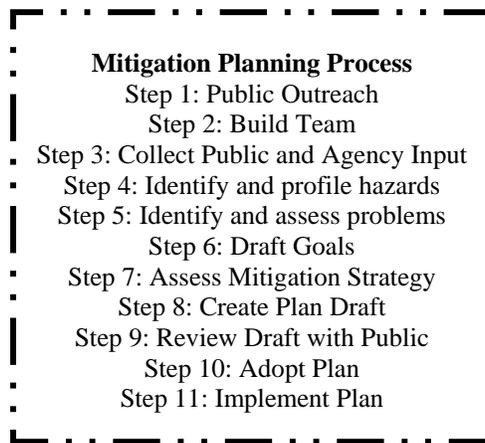
The following is from the 2004 Illinois Natural Hazards Mitigation Plan (INHMP):

“The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended by (PL) 106-390 (Pre-Disaster Mitigation Program, Hazard Mitigation Grant Program and the Flood Mitigation Assistance Program - 44 CFR Part 78) addresses state mitigation planning, identifies new local mitigation planning requirements, authorizes Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to states that develop a comprehensive, enhanced mitigation plan. *The Disaster Mitigation Act of 2000 (DMA 2000) emphasizes the importance of strong state and local planning processes and comprehensive program management at the state level with a link in the planning process between the state and local mitigation programs.* The Federal Emergency Management Agency (FEMA) has promulgated rules for implementation in 44 CFR Parts 201 and 206.”

Plans are necessary for individual communities to mitigate the impact of natural disasters and use the resources available within the community. Plans can help reduce the costs associated with coordinated activities between different government agencies. This NHMP will help communities to work together and use resources to the best of their abilities. There are many requirements to any plan.

1.3 Planning Participation

The mitigation committee followed an eleven-step process. This basic process was derived (generally) by FEMA in their *“State and Local Mitigation: How-to Guide”*. The steps are as follows:



The public was invited to join the process through different media. Residents and businesses that have been affected by previous disasters were encouraged to input. Press releases (see Appendix A), newspaper articles (see Appendix B), contact with planning committee members and organizations, public meetings, and the NCICG website were several means used to invite the public and communities to the process.

A NHMP does not override a comprehensive plan but should coincide and compliment the present comprehensive document as well as other Local Emergency Plans.

See Appendix C for the Community Goals Exercises.

See Appendix D for the survey given to the participating communities at the start of the planning process.

1.3.1 Participating Communities

All municipalities in Bureau County, Marshall County, and Stark County were invited to participate. The following are the communities that decided to participate and passed a resolution stating their commitment to the NHMP. The resolutions passed for the participating communities are in Appendix E.

Participating Communities

Community	Population
Bureau County	35,503
Village of Buda	592
Village of DePue	1,842
Village of LaMoille	773
City of Princeton	7,501
Village of Seatonville	303
Village of Sheffield	946
City of Spring Valley	5,398
Village of Tiskilwa	787
Village of Walnut	1,461

Community	Population
Marshall County	13,180
City of Henry	2,540
City of Lacon	1,979
Village of Sparland	504
City of Toluca	1,339
City of Wenona	1,065

Community	Population
Stark County	6,332
Village of Bradford	787
Village of Lafayette	227
City of Toulon	1,400
City of Wyoming	1,424

The original goal of the plan was to develop a multi-county NHMP for the counties and municipalities. Decision about participation was left to the individual jurisdictions to decide.

1.3.2. Mitigation Committee

This NHMP was developed under the guidance of a natural hazards mitigation committee. The committee was composed of:

1. American Red Cross Staff
2. County and City Professional Staff
3. Emergency Service Disaster Agency (ESDA) Coordinators
4. Emergency Management Agency (EMA) Staff
5. Health Department Staff
6. Local and County Elected Officials
7. Local Engineers
8. Local Police and Fire
9. Regional Planning Commission

1.3.3 Community Participation

The following community members participated in the meetings that went along with the creation of the plan (see Appendix F for the meeting sign-in sheets):

Community	Person	Title	27-Feb-06	25-Apr-06	25-Jan-07	27-Feb-07	28-Mar-07	26-Apr-07	28-Nov-07	17-Jul-08	28-Aug-08	9-Sep-08	28-Sep-08
Bureau County													
Bureau County	Kris Donarski	ESDA Coordinator	X	X	X	X	X	X	X		X		X
	Les Grant	County Health Dept.	X										
Village of Buda	Pete De Freezer	Commissioner								X		X	
Village of Depue	Eric C. Bryant	Village Trustee									X		X
Village of LaMoille	Leonardo Lopez	Village Trustee											X
	Steve Sondgeroth						X	X					
City of Princeton	Pete Nelson	Planning & Zoning		X	X	X	X			X			X
Village of Seatonville	Chad Errio	Village Trustee	X									X	
	Zach Plym	Village Trustee										X	X
	Bill Heitz	Fire Department											X
Village of Sheffield	William Rosenow	Mayor					X	X				X	
City of Spring Valley	James Narczewski	Mayor									X		X
Village of Tiskilwa	Randy Philhower	President	X		X	X	X	X				X	X
Village of Walnut	Gary Brooks	President									X		X
Marshall County													
Marshall County	Dennis Boqner	County Chairman										X	X
City of Henry	Daryl Fountain	Mayor					X					X	
	Jim Lykins	ESDA Coordinator							X				
City of Lacon	Mike Heill	Mayor									X		X
Village of Sparland	Roger Wilkinson	President									X		X
City of Toluca	Larry L. Harber	Mayor										X	
	Dave Dollinger	Coordinator										X	X
	Stephen Piasse	ESDA Coordinator											X
Village of Wenona	Bill Simmons	City Administrator									X		X
Stark County													
Stark County	Fred Sams	ESDA Coordinator	X	X			X		X		X		X
Village of Bradford	Fred Sams	ESDA Coordinator	X	X			X		X		X		X
Village of Lafayette	Carl Peeve	President										X	
	Fred Sams	ESDA Coordinator	X	X			X		X		X		X
City of Toulon	Fred Sams	ESDA Coordinator	X	X			X		X		X		X
City of Wyoming	Steve Hansard	President		X									
	Fred Sams	ESDA Coordinator	X	X			X		X		X		X

NCICG had the lead role in the creation of the plan and the planning process. NCICG can be contacted at: planning@ncicg.org, 815-875-3396, and by mail at 110 N. Main St., Princeton, IL 61356.

The following was what was discussed and accomplished at the meetings:

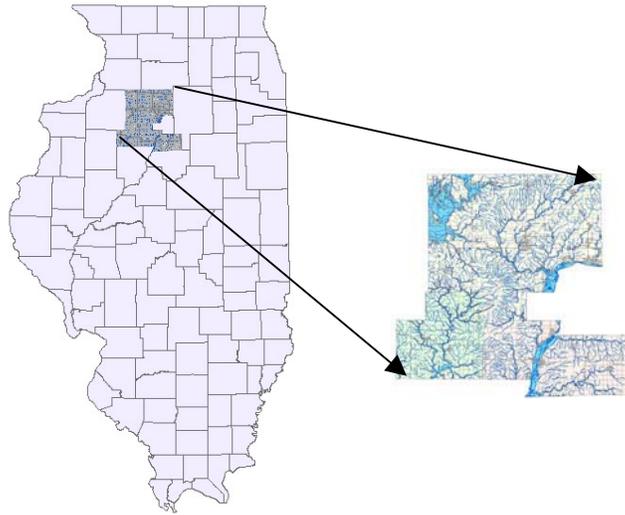
Date of Meeting	Accomplishments
27-Feb-06	Informed public of what a mitigation plan was, and asked interested parties to attend to join the process.
25-Apr-06	Informed participants of what hazards are and the benefits of a NHMP. Filled out Goal Exercise Worksheets.
25-Jan-07	Putnam County sheriffs discussed post-disaster chain of command.
27-Feb-07	General meeting to discuss community concerns
29-Mar-07	Explanation of CRS program
26-Apr-07	General meeting to discuss community concerns
29-Nov-07	Reviewed first Draft of NHMP.
26-Aug-08	Discussed new parameters of NHMP and addressed additional community information dealing with action items and floodplains.
25-Sep-08	Reviewed second Draft of NHMP.

Drafts of the plan were sent to every participating community. Participants were asked to review the draft and return comments within two weeks. Comments were taken into consideration and used if the suggestion benefited the majority of jurisdictions. The NCICG website was also utilized as a means for people to participate (see Appendix G for a website overview). The draft plans were posted and available for comment.

The public was given the opportunity to comment on the plan both during and after the drafting stages and prior to plan approval during local jurisdictions monthly meetings, during the meetings of the plan mitigation committee, and in writing to each participating jurisdiction or to NCICG.

1.4 County Locale

Illinois is part of FEMA's Region V, which also includes Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Bureau, Marshall, and Stark Counties are located in the North Central Region of Illinois. The three counties are shown on the map below.



Bureau County, the majority of Marshall County, and eastern Stark County were all part of the original boundary of Putnam County (from the Illinois River to the Wisconsin border and to the south fork of the Kankakee River including Chicago). They became individual counties in 1839.

1.5 Local Documentation

There are many jurisdictions within Bureau County, Marshall County, and Stark County. Most of these communities do not have comprehensive plans or have plans that are outdated. However, some communities, such as the City of Princeton, in Bureau County, updated their comprehensive plan in 2001.

1.6 County Demographics

Based on the 2000 U.S. Census, Bureau County has a population of 35,503, less than half of which is considered rural. Marshall County has a population of 13,180, while Stark County's population is 6,332. All of Stark County is considered rural, while 2,544 of Marshall County's population is rural. There are 15,331 housing units in Bureau County, 5,914 in Marshall County, and 2,725 in Stark County. Housing units included vacant, owned, and rented buildings and/or complexes. The information was gathered from the Census 2000 database.

1.7 Critical Facilities

A critical facility is any building, which is critical to the health and welfare of the population and, if impeded by disaster, would create added negative impacts. Damage to these critical facilities could impact the delivery of vital services, cause greater damage to other sectors of the community, and/or put special populations at risk.

Examples of critical facilities where flood protection should be required include: Emergency Services Facilities (such as fire and police stations), schools, hospitals, retirement homes and senior care facilities, major roads and bridges, critical utility sites (telephone switching stations or electrical transformers), hazardous material storage facilities (chemicals, petrochemicals, hazardous or toxic substances).



Examples of critical facilities where flood protection is recommended include: Sewage treatment plants, water treatment plants, and pumping stations.

For this NHMP, there will be six categories of critical facilities. The six categories are as follows:

1. *Hazardous Materials*
2. *Public Safety* – includes medical care facilities, police, fire, health care, and emergency shelters
3. *Schools*
4. *Utilities* – power stations, potable water facilities, and wastewater treatment, oil refineries, natural gas compressor plants, electric power plants, and broadcast facilities
5. *Dams*
6. *Nuclear Facility*

1.8 Community Rating System (CRS)

The CRS is a voluntary incentive program for National Flood Insurance Program (NFIP) participating communities. The CRS encourages community floodplain management activities that exceed the minimum NFIP requirements. The results of reduced flood risk resulting from community actions are a reduction in flood insurance premium rates. The three goals of the CRS are to reduce flood losses, facilitate accurate insurance rating, and promote awareness of flood insurance.

All communities begin with a class 10 rating, which has no discount and is any community in full compliance with the rules and regulations of the NFIP. The class 1 rating requires the most credit points and awards the highest premium reduction, a 45% discount.

The CRS identifies 18 creditable activities, organized under four categories. Each activity is assigned evaluation measures and a corresponding score. A community is rated on the total number of points generated during a particular evaluation.

Eligible floodplain management activities include:

1. *Public Information Activities* - from elevation certificates, flood zone information and outreach projects to hazard disclosure, flood protection information and flood protection assistance.
2. *Mapping & Regulator Activities* - from detailed flood data and open space preservation to flood data maintenance and storm water management.
3. *Flood Damage Reduction Activities* - from floodplain management and acquisition/relocation plans to flood protection and drainage systems maintenance.
4. *Flood Preparedness Activities* - from flood warning programs to levee safety to dam safety.

As of September 2007, according to FEMA, there are 1,049 communities receiving flood insurance premium discounts based on floodplain management activities that go beyond the minimum NFIP requirements. Premium discounts are a benefit of participation in CRS, communities also initiate activities that save lives and reduce property damage. These 1,049 communities represent a significant portion of the Nation's flood risk as evidenced by the fact that over 67% of the NFIP's policy base is located in these communities.

Credit points earned, classification awarded, and premium reductions given for communities in the National Flood Insurance Program Community Rating System.			
		Premium Reduction	
Credit Points	Class	SFHA*	Non-SFHA**
4,500+	1	45%	10%
4,000 – 4,499	2	40%	10%
3,500 – 3,999	3	35%	10%
3,000 – 3,499	4	30%	10%
2,500 – 2,999	5	25%	10%
2,000 – 2,499	6	20%	10%
1,500 – 1,999	7	15%	5%
1,000 – 1,499	8	10%	5%
500 – 999	9	5%	5%
0 – 499	10	0	0
*Special Flood Hazard Area			
www.fema.gov			

The SFHA is also known as the 100-year floodplain (detailed explanation in chapter 2).

The CRS rating is not permanent. Communities must continue to implement the activities to receive the reduced insurance rates. There are many reasons the CRS program is important, beyond just receiving reductions of insurance rates. The other benefits should be considered because few CRS activities will produce premium reductions equal to or in excess of the implementation costs. The benefits are as follows:

1. Enhanced public safety, reduction in damage to property and public infrastructure, avoidance of economic disruption, reduction of human suffering, and protection of the environment.
2. Evaluation of flood program against nationally recognized benchmark.
3. Technical assistance in designing and implementing some activities at no cost.
4. Incentive to maintain flood programs (discontinuation of CRS status).
5. Implementing some CRS activities allows communities to qualify for Federal assistance.

CRS creditable activities are addressed throughout this NHMP. Some of the options for credit are noted. It is, however, the responsibility of the community to research elements of the Community Rating System and follow proper procedures for application and project coordination.

1.9 References

2004 Illinois Natural Hazards Mitigation Plan

Community Rating System Resource Center. Emergency Management Institute.
<http://training.fema.gov/EMIWeb/CRS/Index.htm>

“Construction activities in special flood areas.” www.illinois.gov. 2005.

Des Plaines, Illinois Natural Hazard Mitigation Plan. January 2007.

HAZUS MH Software

Kankakee County Natural Hazard Mitigation Plan. October 2005.

www.fema.gov

City of Princeton Comprehensive Plan - 2001

Chapter 2: Hazard Profile

This chapter presents the basic information on the hazards that are present in Bureau, Marshall, and Stark counties. The Counties of Bureau, Marshall, and Stark have potential risk for a multitude of natural hazards. The possible hazards include:

Thunderstorms (which can produce lightning, hail, and tornados)
Winter Storms
Floods
Earthquakes
Drought
Extreme temperatures (heat/cold)

The following two hazards are unlikely, but mentioned due to the possibility of occurrence.

Landslides
Wildfires

Throughout this section, each hazard is addressed and examined individually; the statistics are examined at the county level and a summary of historical occurrences in the county, along with the probability of future occurrences (see Appendix H for complete listing). Some events are limited to the northern Illinois area and have a possibility of occurrence, but have not occurred within Bureau, Marshall, and Stark Counties. Just because a hazard has not occurred, does not mean there is no chance of the hazard occurring. It is important to know that depending on the severity of an individual event, there will be differing effects from that hazard, on a community.

2.1 Thunderstorms

Thunderstorms are dangerous because of the weather phenomenon that is associated with them. Thunderstorms have the capability to produce tornados, lightning, hail, flash flooding, and strong winds. The average thunderstorm is 15 miles in diameter and lasts 30 minutes. Approximately 100,000 thunderstorms occur in the United States every year. On average, about 10,000 of those are classified as severe storms. The National Weather Service considers a thunderstorm severe if it produces hail at least .75 inches in diameter, winds of 58 mph or stronger, or a tornado.

Thunderstorms in the U.S. cause 70 deaths per year due to flash floods, 55 due to lightning, and 31 due to winds. The following table illustrates the thunderstorm and high wind occurrences in Bureau, Marshall, and Stark Counties from 1950 until 02/28/2008. A full list of detailed thunderstorm events, by jurisdiction, is provided in Appendix H.

Thunderstorms and High Wind					
01/01/1955 to 02/28/2008					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau	99	2	0	3.349M	263K
Marshall	74	5	1	378K	0
Stark	54	3	1	148K	0
Total	227	10	2	3.875M	263K

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

There are four different types of thunderstorms. The four types are single cell, multicell clusters, multicell lines or squall lines, and supercell. They are identified below according to the University of Illinois WW2010 Project.

Single cell storms, also known as pulse storms, usually last for approximately 20-30 minutes. They generally do not cause severe weather.

A *multicell cluster* consists of a group of cells moving as a single unit. One cell denotes one updraft/downdraft couplet. There are several updrafts and downdrafts in proximity with a multicell storm. Each cell is in a different stage of the thunderstorm life cycle. As the multicell cluster develops, individual cells take turns at being the most dominant. New cells tend to form along the upwind (typically western or southwestern) edge of the cluster, with mature cells located at the center and dissipating cells found along the downwind (east or northeast) portion of the cluster.

A *squall line* or multicell line tends to form in long lines with a well-developed gust front at the leading edge of the line. An approaching multicell line often appears as a dark bank of clouds covering the western horizon.

A *supercell* is a thunderstorm with a deep rotating updraft (mesocyclone). They are the rarest thunderstorm but are extremely dangerous. Severe events almost always occur near the updraft/downdraft interface. These are typically in the rear of the storm but storms do have them in the front as well.

Thunderstorms can occur anywhere, anytime, and have the potential to affect anyone and everyone. Bureau, Marshall, and Stark Counties have experienced deaths, injuries, and damage to property and crops due to thunderstorms and their capability to produce other hazards.

From available data, it is determined that the probabilities of thunderstorms that produce lightning, high winds or hail in Bureau, Marshall, and Stark Counties are 100 percent.

2.1.1 Lightning

Lightning is the flash of light produced by a discharge of atmospheric electricity. Lightning occurs during all thunderstorms and has the possibility of striking anywhere. Its generated outcome is created by the buildup and release of electrical energy between positively and negatively charged areas. Ascending and descending air within a thunderstorm separates these positive and negative charges. Every thunderstorm will have lightning.

A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

According to the NOAA, lightning causes an average of 80 fatalities and 300 injuries nationally each year. The air near a lightning strike is heated to 50,000°F. Fatalities have occurred while people were talking on the phone, playing golf, boating, bike riding, and even mountain climbing. Lightning truly can strike anywhere.

The rapid heating and cooling of the air near the lightning channel causes a shock wave that results in thunder. The distance of a thunderstorm can be calculated by counting the number of seconds between a flash of lightning and the next clap of thunder. Divide the number by 5 to determine the distance in miles to the lightning.

For example, if there is 10 seconds between the lightning flash and the thunder (10 divided by 5 = 2), then the lightning is 2 miles away. Knowing that lightning can occur in front and behind a thunderstorm, even when there is little to no rain accompanying the storm will help prepare for disaster.

The following table shows the number of deaths, injuries, and damages caused by lightning in Bureau, Marshall, and Stark Counties. A complete list of lightning events, by jurisdiction, in Bureau, Marshall, and Stark Counties is provided in Appendix H.

Lightning					
01/01/1950 to 02/28/2008					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau	4	0	0	86K	0
Marshall	0	0	0	0	0
Stark	0	0	0	0	0
Total	4	0	0	86k	0

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

2.1.2 Hail

Hail is “precipitation in the form of small balls or lumps usually consisting of concentric layers of clear ice and compact snow” according to the Merriam-Webster Dictionary. Hail is damaging to both property and crops throughout Illinois. Hail is difficult to measure due to the fact that it is only in its solid form for a few minutes before it begins to melt.

In Bureau County, 63 hail events were recorded since 1950. Over half of the events were of hail greater than one inch in diameter. Nine hail events were over two inches in diameter and one event recorded was hail four inches in diameter, which caused \$60,000 worth of property and crop damage. Marshall County had 32 hail events, half of which were over one inch in diameter. Stark County had 29 hail events recorded, 13 of which were over one inch in diameter. The probability and possibility of hail occurring in any one of the three counties is highly likely and unpredictable. The following is a table with the events.

Below is a summary of the hailstorms in Bureau, Marshall, and Stark Counties. In Appendix H is a detailed list of all storms, by jurisdiction, occurring between 1950 and 02/28/2008.

Hail Events							
01/01/1950 to 02/28/2008							
County	Quantity	Quantity over 1 inch	Quantity over 2 inches	Injuries	Deaths	Property Damage	Crop Damage
Bureau	64	39	9	0	0	2.232M	432K
Marshall	32	18	1	0	0	0	0
Stark	29	13	1	0	0	0	0
Total	124	70	11	0	0	2.232M	432K

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

The US National Weather Service recognizes a series of descriptor terms for various hailstone diameters, ranging from pea-sized to softball-size. The size of hailstones usually increases with the intensity of the storm cell from which they are produced. Large hail, that which is greater than two inches, forms mostly in supercell thunderstorms.

Hail can be found in the middle and upper portions of almost all thunderstorms. However, most either melts before hitting the ground, or being very soft, disintegrates in the violent thunderstorm interior. Large hailstones fall at speeds faster than 100 mph. Hail falls along paths known as hail swaths. These can be a few acres in area to 10 miles wide by 100 miles long. Wide hail swaths usually are associated with squall line thunderstorms. Thunderstorm information was presented previously in this section.

2.1.3 Tornadoes

A tornado is, according to the Glossary of Meteorology¹, a “A violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud

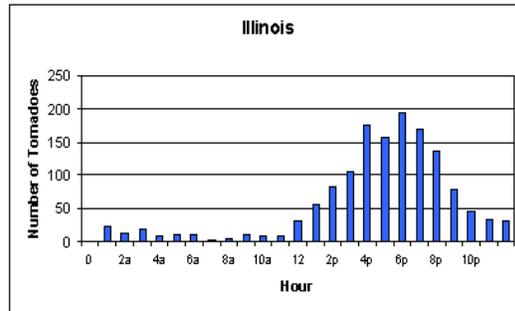
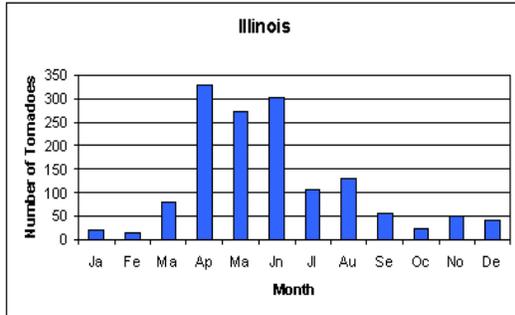
Tornadoes are classified using the Fujita (F) Scale, which has, as of February 2007, been modified into the Enhanced Fujita (EF) Scale. Dr. T. Theodore Fujita first introduced the Fujita scale, in 1971. He wanted to be able to classify tornadoes according to intensity and area, as well as estimate a wind speed according to the damage caused by the tornado. Due to weaknesses and misuses, scientists have determined a new system that can coincide with the original F-scale yet be more effective and consistent.

The use of the EF-Scale to determine the tornado's EF-rating begins with the 28 damage indicators (these can be found at <http://www.spc.noaa.gov/efscale/ef-scale.html>). Each indicator has a description of the typical construction that is within the indicator category. Once the damage indicator is determined the Degree of Damage must be figured. Each Degree of Damage is given an expected estimate of wind speed, a lower bound of wind speed and an upper bound of wind speed. The original Fujita scale was based on damages alone, while the Enhanced Fujita Scale takes other factors into consideration. See the comparative chart on the following page.

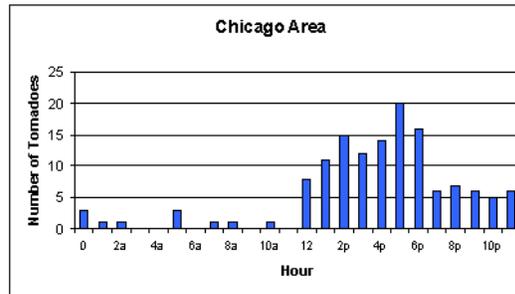
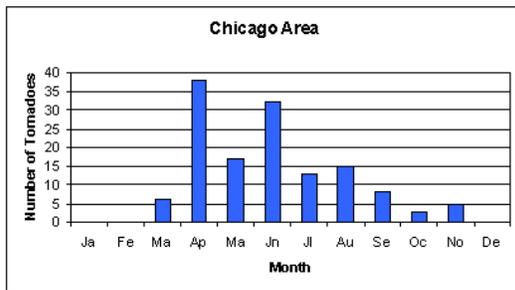
¹ The Glossary of Meteorology is published by the American Meteorological Society. It contains authoritative source for meteorological terms.

Fujita Tornado Damage Scale			Enhanced Fujita Tornado Damage Scale	
Scale	Wind Estimate (MPH)	Typical Damage	Scale	Wind Estimate (MPH)
F0	<73	Light Damage: Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; signboards damaged.	EF0	65-85
F1	73-112	Moderate Damage: Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.	EF1	86-110
F2	113-157	Considerable Damage: Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.	EF2	111-135
F3	158-206	Severe Damage: Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.	EF3	136-165
F4	207-260	Devastating Damage: Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.	EF4	166-200
F5	261-318	Incredible Damage: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.	EF5	>200

The following charts show that, in Illinois, tornados are more likely to occur in the spring months between the afternoons to late evenings. In Chicago, there is the same likelihood for tornado occurrence in the spring and afternoon to evening hours. In Chicago, as well as, in all of Illinois, the spring months see the most tornados, though the occurrence of tornados does drop in May within the Chicago vicinity.

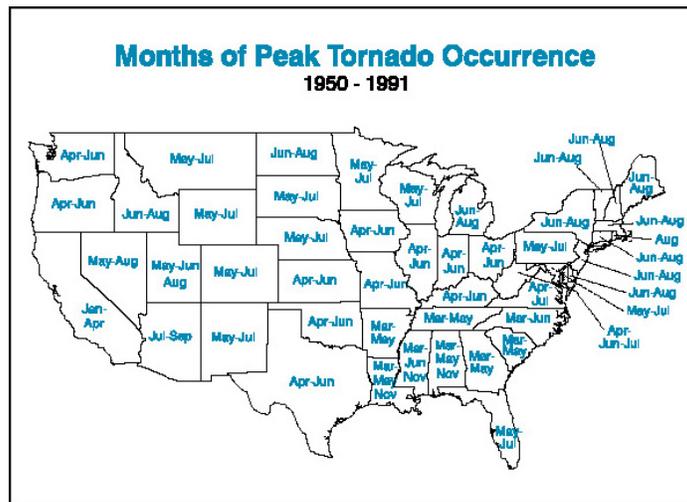


Dunnebeck, Brian and Jim Angel. "Description of Illinois Tornadoes" 8Sept2006. Illinois State Water Survey. 3Oct2007. http://www.sws.uiuc.edu/atmos/statecli/Tornado_v2/illinois.htm



Dunnebeck, Brian and Jim Angel. "Chicago-Area Tornado Graphs" 8Sept2006. Illinois State Water Survey. 3Oct2007. http://www.sws.uiuc.edu/atmos/statecli/Tornado_v2/chicagoarea.htm

The following map indicates the peak tornado months for the contiguous U.S.



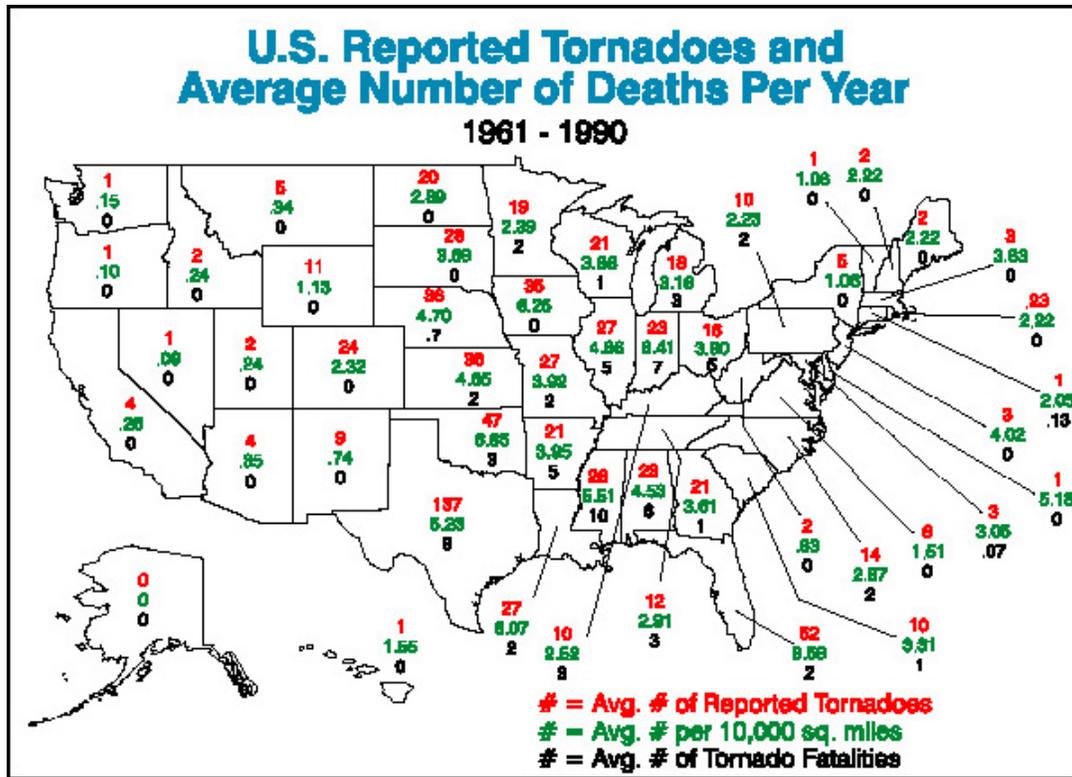
<http://www.nssl.noaa.gov/edu/safety/tornadoguide.html>

The chart below depicts the number of tornados that have occurred in the United States. More tornados occur in the month of May, but the spring months of April, May, and June (prime tornado season) are all very high.

United States Tornadoes 1950-1997													
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Tornadoes	719	975	2514	5002	8185	7717	4509	2806	1829	1298	1398	811	37757
Deaths	105	274	602	1245	883	521	63	113	75	82	149	124	4225

Tornado Statistics by Year and Month 1950 – 1997. <http://www.disastercenter.com/tornado/tornad2.htm>

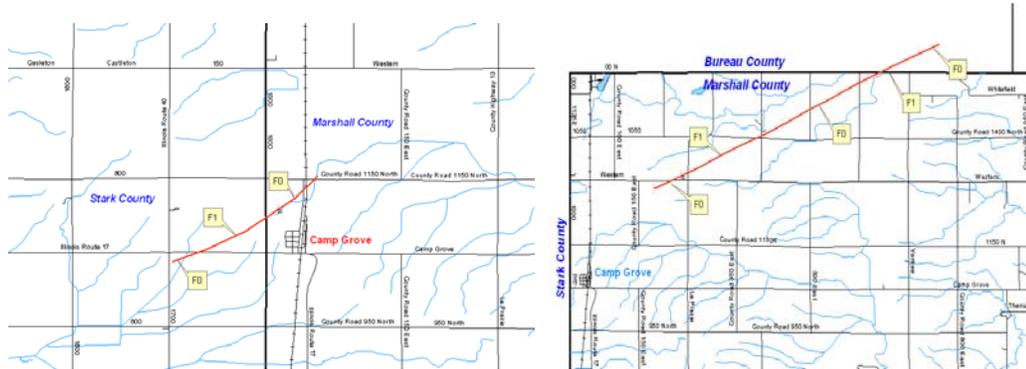
The following map indicates the average number of tornadoes reported and the average number of deaths per year in the United States. Illinois, on average, reports 27 tornadoes per year. The surrounding states average in and around the 20's, with the exception of Iowa with 35 tornadoes per year.



<http://www.nssl.noaa.gov/edu/safety/tornadoguide.html>

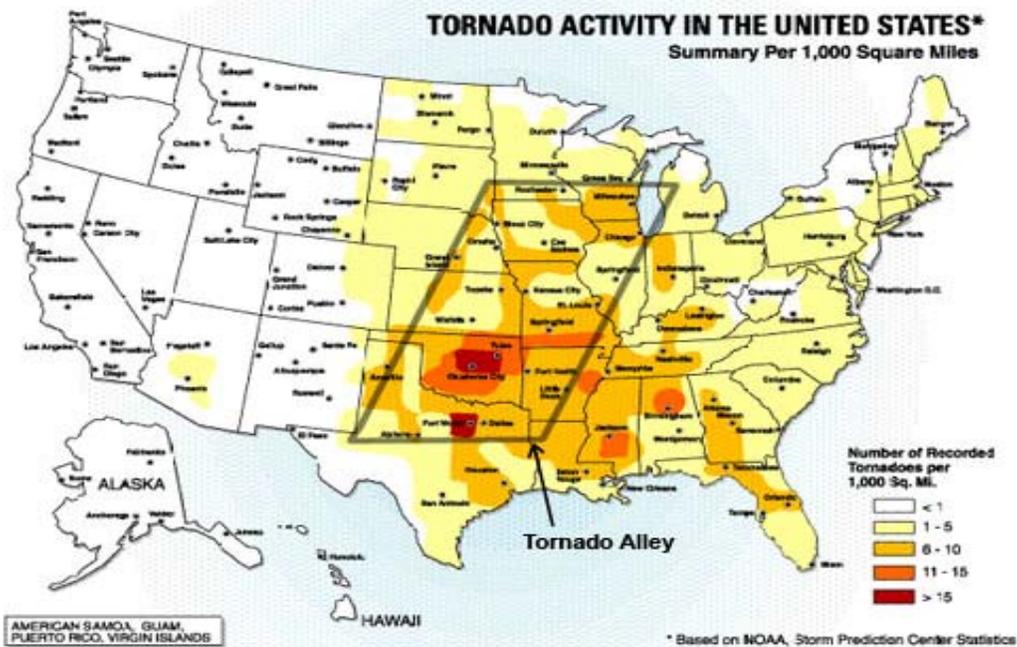
Any tornado has the potential to be a deadly tornado. The neighboring Counties of LaSalle and Putnam experienced one in April of 2004. The average tornado moves from southwest to northeast, as did the April 20, 2004 tornado, but tornados have been known to move in any direction. The average forward speed is 30 mph. Tornados, however, may be stationary or move forward at up to 70 mph.

The following pictures show two paths from two different tornados from the April 20, 2004 tornado outbreak.



<http://www.crh.noaa.gov/ilx/events/apr202004/apr20tor.php>

According to the National Oceanic and Atmospheric Administration (NOAA): The boundaries of tornado alley are debatable depending on the criteria used to locate it. Criteria may include such elements as frequency and/or intensity. “The area from central Texas, northward to northern Iowa, and from central Kansas and Nebraska east to western Ohio is often collectively known as Tornado Alley. Climatologically, Tornado Alley is ideally positioned for the formation of super-cell thunderstorms, and therefore is also home to many violent tornadoes.” The map below includes north central Illinois within the bounds of tornado alley. The Counties of Bureau, Marshall, and Stark, which in the past have been nearly affected by devastating tornados, are considered in tornado alley according to NOAA.



The number of tornadoes recorded per 1,000 square miles

<http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html#alley> 5Sep2007

The following chart illustrates the damage tornados have inflicted upon the three counties from 1950 into 2007. A complete detailed list of historic tornado events, by jurisdiction, is provided in Appendix H.

Tornados					
01/01/1950 to 03/31/2007					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau	28	1	1	4.987M	38K
Marshall	6	1	0	2.778M	0K
Stark	7	0	0	2.553M	0K
Total	41	2	1	10.318	38K

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

Illinois is ranked 5th in the United States for property damage average costs per year due to tornados at \$62.94 million.

From the above table, 41 tornados have been documented for the past 58 years in Bureau, Marshall, and Stark Counties. This means there is a 70 percent chance of a tornado in any given year. Tornados can, however, affect the entire area.

2.2 Earthquakes

The earth's outer surface is composed of tectonic plates. These plates constantly move away from, towards or past each other. The continents, which are part of these plates, also move. The sudden movement of the Earth caused by the abrupt release of accumulated strain along a fault in the interior is an earthquake. The released energy passes through the Earth as seismic waves, which cause the shaking. Seismic waves continue to travel through the Earth after the fault motion has stopped.

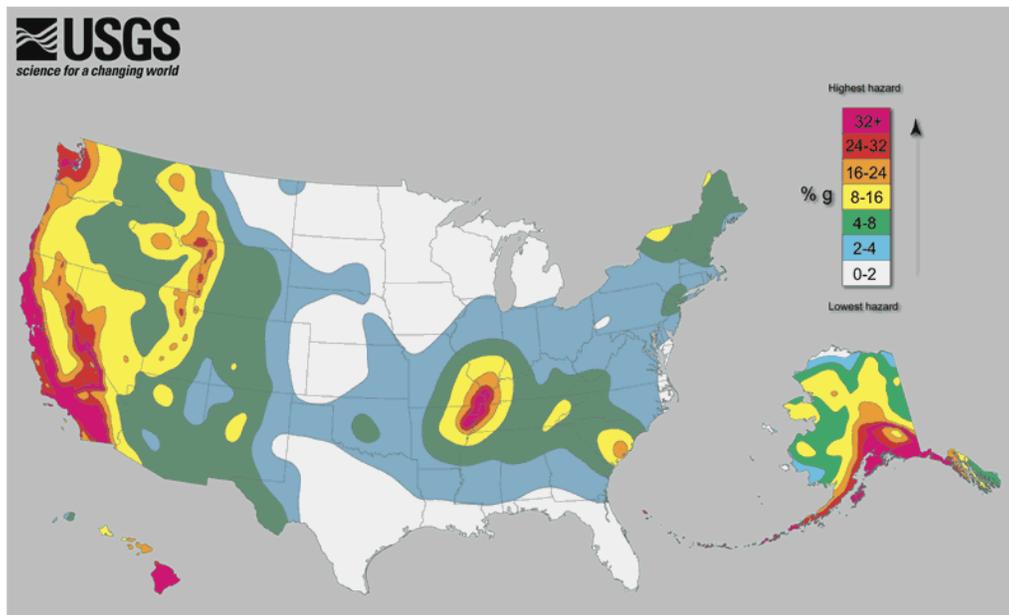
Plate tectonics revolutionized the way geologists view Earth. Plate tectonics are the unifying concept of geology. It explains nearly all of Earth's major surface features and activities. These include faults and earthquakes, volcanoes and volcanism, mountains and mountain building, and even the origin of the continents and ocean basins.

Tectonic plates can interact in one of three ways. They can move toward one another, or *converge*. They can move away from one another, or *diverge*. They can slide past one another, or *transform*. The boundaries where plates meet are known as plate margins. The types of geologic activity that occur when two plates interact are dependent on the nature of the plate interaction and of the margins. Plate margins come in three varieties: oceanic-oceanic, continental-continental, and continental-oceanic.

According to the USGS, earthquake severity is measured by intensity and magnitude. Intensity is an observed effect of ground shaking on people, buildings, and natural features. Magnitude is based on the amplitude of the earthquake waves recorded on instruments, near the hypocenter of the earthquake, which have a common calibration. The magnitude of an earthquake is a value determined by an instrument, such as the seismograph.

Since 1811, the earthquakes in the United States have resulted in the deaths of more than 3,400 people. Fires, landslides and tsunamis caused many of those deaths. In fact, over 350 deaths were caused by tsunamis that followed the earthquakes. These occurred in such places as Hawaii and Alaska.

The following map illustrates the hazard potential from the New Madrid fault at the Southern portion of Illinois and the Missouri, Arkansas, Tennessee borders. According to FEMA, Illinois is at a high risk for an earthquake.



http://earthquake.usgs.gov/research/hazmaps/products_data/48_States/index.php

USGS: Earthquake Hazards Program 2Aug2007

The Richter magnitude scale was developed in 1935 by Charles F. Richter. It is a mathematical device that compares the size of earthquakes. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude of 5.3 might be computed for a moderate earthquake. The logarithmic basis of the scale presents each whole number increase in magnitude, a tenfold increase in measured amplitude. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value. The Richter scale does not express damage. The Richter scale has no upper limit. The largest known shocks have had magnitudes from 9.0 to 9.5.

Earthquakes with magnitude of approximately 2.0 or less are usually called microearthquakes. Microearthquakes are not commonly felt by people and are generally recorded only on local seismographs. Events with magnitudes of approximately 4.5 or greater, of which there are several thousand annually, are strong enough to be recorded by sensitive seismographs all over the world. Great earthquakes are usually, on average, 8.0 or higher. One great earthquake of such size occurs somewhere in the world each year. The following table shows the probability of earthquake events in The New Madrid Seismic Zone which includes Illinois:

Richter	Year 2000	Year 2035
6.3	40% - 63%	86% - 97%
7.6	5.4% - 8.7%	19% - 29%
8.3	0.3% - 1.0%	2.7% - 4.0%

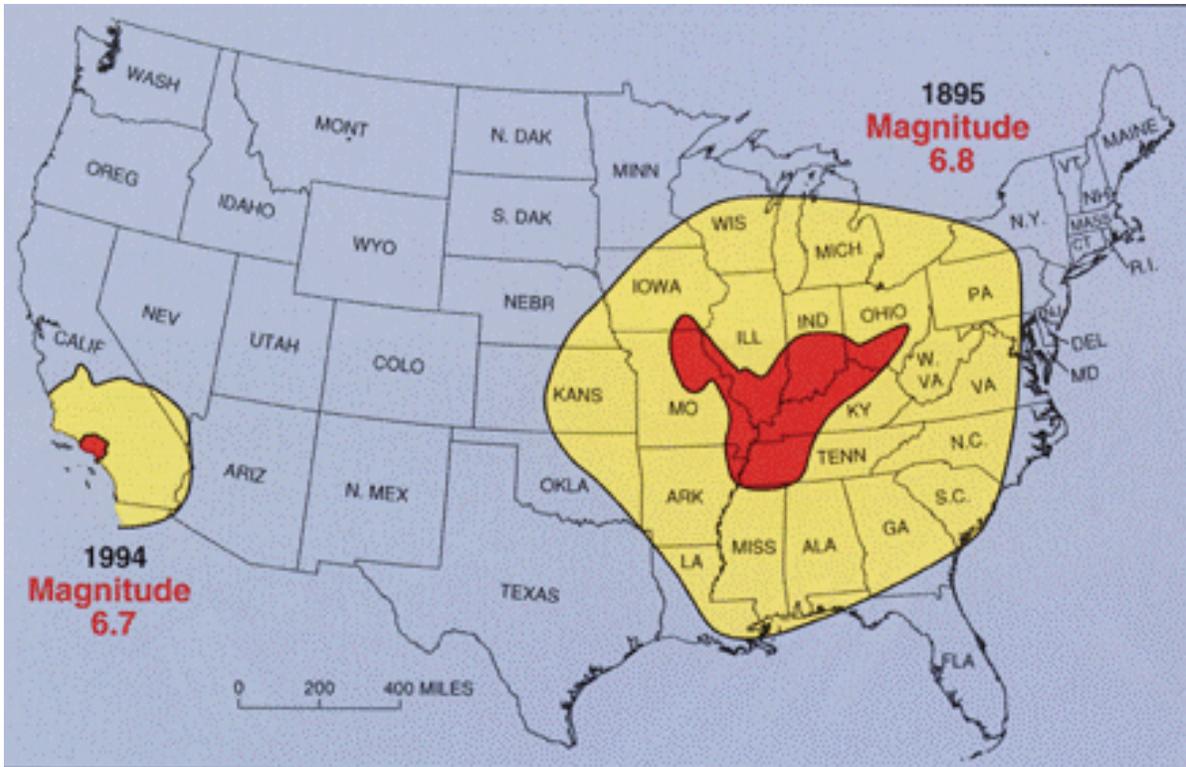
Source: Illinois State Geological Survey

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and total destruction. The intensity scale currently used in the United States is the Modified Mercalli (MM) Intensity Scale, developed in 1931. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It is an arbitrary ranking based on observed effects. Generally, the maximum observed intensity occurs near the epicenter.

Earthquake Measurement Scales		
Mercalli	Richter	Felt Intensity
I	0-4.3	Not felt except by a very few under especially favorable conditions.
II		Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III		Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV	4.3-4.8	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V		Felt by nearly everyone; many awakened. some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	4.8-6.2	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII		Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	6.0-7.3	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX		Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X		Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rail bent.
XI	7.3-8.9	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII		Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Earthquakes in the central or eastern United States are less frequent but affect much larger areas than earthquakes of similar magnitude in the western United States. Differences in geology east and west of the Rocky Mountains cause this strong contrast.

The map on the following page illustrates two areas affected by earthquakes of similar magnitude—the 1895 Charleston, Missouri, earthquake in the New Madrid seismic zone and the 1994 Northridge, California, earthquake. The red indicates major to minor damage and the yellow indicates little to no damage.



Prescott, Will. USGS. <http://quake.wr.usgs.gov/prepare/factsheets/NewMadrid/>. The Mississippi Valley-"Whole Lotta Shakin' Goin' On"U.S. Geological Survey Fact Sheet-168-95 1995. 2Mar1998.

One of the largest earthquakes in Illinois was on May 26, 1909. This was felt over 500,000 square miles including strongly in Iowa and Wisconsin. On November 9, 1968 a magnitude 5.3 shock was felt in over 23 states and over a 580,000 square mile radius. Quakes in nearby states have been felt in Illinois on random occasions.

The map of Illinois on the following page illustrates the location of recent earthquakes. The red star illustrates the earthquake that occurred in Ottawa in LaSalle County. The possibility of this earthquake being felt in the neighboring Counties of Bureau, Marshall, and Stark is very high since some earthquakes occurring in Illinois have been felt as far away as Boston and Ontario, Canada.

2.3 Floods

According to Merriam - Webster’s Dictionary, a flood is defined as “a rising and overflowing of a body of water especially onto normally dry land.” Floods are one of the most common hazards in the United States. Every state is at risk for a hazardous flood event to occur. Floods can develop over a period of days or within a few minutes (flash floods). Flash floods often are a wall of fast moving water that carries rocks, mud, and other debris and can sweep away most things in its path. When a dam breaks it may produce the same effects as flash floods. Overland flooding occurs outside a defined river or stream.

Flood designations are based on statistical averages, not the number of years between floods, like the term 100-year flood depicts. The term “100-year flood” means that during any year there is a 1 in 100 chance that a large flood will occur. Climate naturally varies so large floods could happen in successive years or sporadically. The following table is an overview of the chance of a flood based on time periods and according to size. By definitions used in the National Flood Insurance Program, the probability of a 10-year flood is 10 percent in any given year, and 1 percent for a 100-year flood in any given year.

Chance of Flooding				
Time Period	Flood Size			
	10-year	25-year	50-year	100-year
1 year	10.00%	4.00%	2.00%	1.00%
10 years	65.00%	34.00%	18.00%	10.00%
20 years	88.00%	56.00%	33.00%	18.00%
30 years	96.00%	71.00%	45.00%	26.00%
50 years	99.00%	87.00%	64.00%	39.00%

The following table depicts the quantity of floods that have occurred in Bureau, Marshall, and Stark Counties and the amounts of injuries and deaths caused by these floods. The amount of property damage has also been included in table. The list of historic flood events for Bureau, Marshall, and Stark Counties is included in Appendix H.

Floods					
01/01/1950 to 02/28/2008					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau	9	0	0	100K	0K
Marshall	11	0	1	0	0K
Stark	5	0	0	0	0K
Total	25	0	1	100K	0K

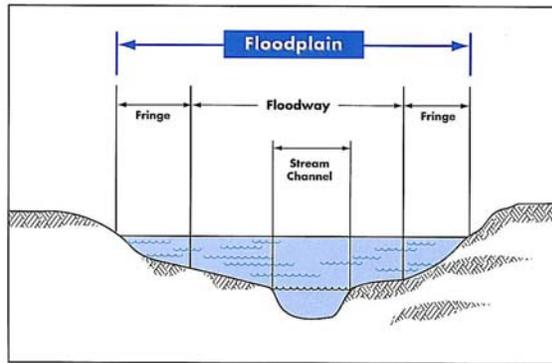
<http://www4.ncdc.noaa.gov/cgi-win/wvci.dll?wwEvent~Storms>



<http://geology.com/state-map/illinois.shtml>

Understanding the chance of a flood occurrence is not enough. One must also know where and why they could occur. Understanding the floodplain and floodway, as well as how flooding affects these areas is essential. A floodplain is the land that is subject to a 1% annual chance or greater of flooding in any given year. The floodway is the channel of a river or other watercourse and the adjacent land acres that must be reserved in order to pass the base flood without increasing the water surface elevation more than a designated height.

Understanding the Riverine Floodplain

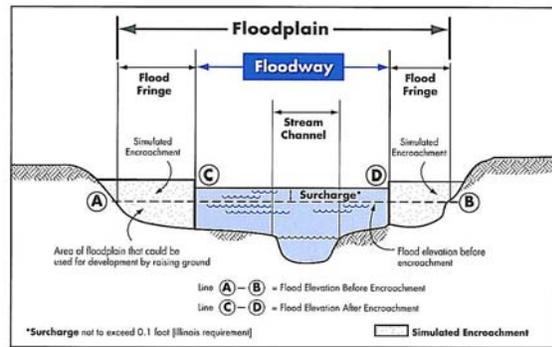


Terms and Definitions

The Floodplain is the land that is subject to a 1%-annual-chance or greater chance of flooding in any given year. On FIRMs and Floodway maps, the Floodplain may be designated as Zones A, AO, AH, A1-30, AE, or A99.

See page 5, *Understanding the Floodway*, to learn about the area of the floodplain where floodwaters usually flow faster and deeper.

Understanding the Floodway



Terms and Definitions

The Floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to pass the base flood without increasing the water surface elevation more than a designated height.

Computer models of the floodplain are used to simulate "encroachment" or fill in the flood fringe in order to predict where and how much the base flood elevation would increase if the floodplain is allowed to be filled.

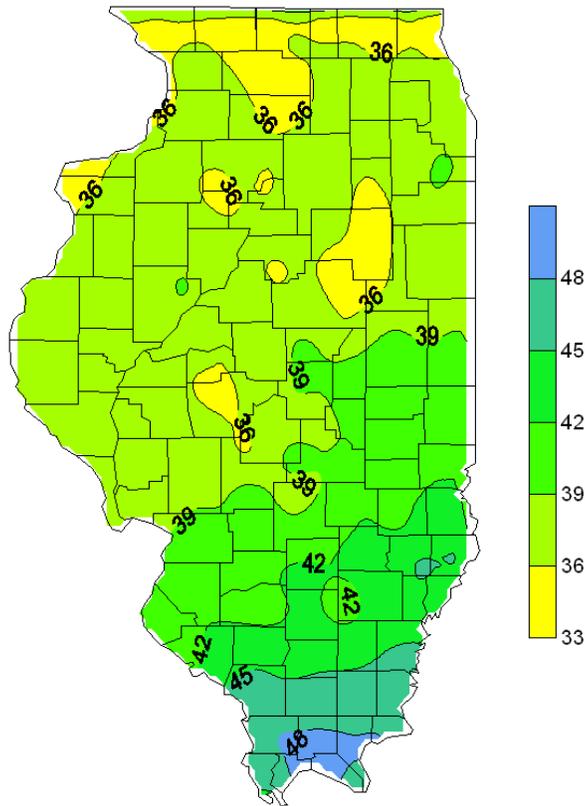
In Illinois, the Floodway boundary is drawn where the computer model indicates that the water surface will increase 0.1' due to the simulated encroachment.

The following table is the deaths from floods in a 10-year period (from 1988 to 1997). The deaths are for the state of Illinois as well as the country as a whole.

Flood Deaths											
Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Illinois	0	0	4	1	0	1	2	1	2	1	12
United States	37	74	125	58	87	109	70	103	131	98	892

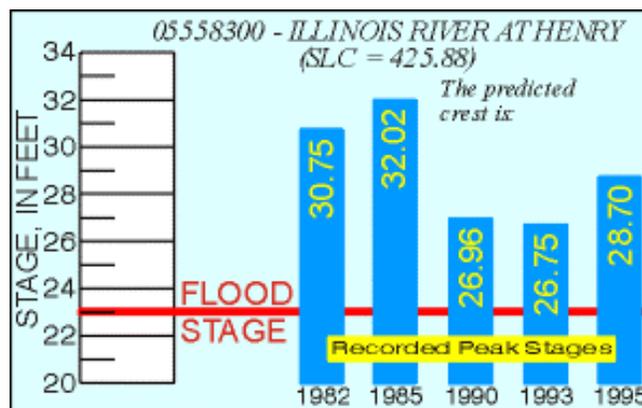
<http://www.essc.psu.edu/hazards/rawdata/flood1.htm>

1971-2000 Normal Annual Precipitation (in)



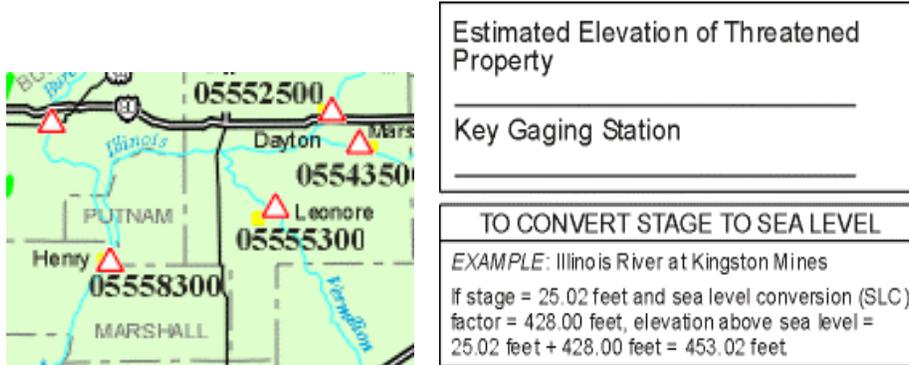
Illinois State Water Survey, Office of the State Climatologist

The following chart is a flood-tracking chart for the Illinois River Basin. The graphs are of selected historical recorded flood-crest stages at each of the stations, and sea-level conversion (SLC) factors that allow conversion of the current or predicted flood-crest stage to elevation above sea level. Each graph represents a streamflow-gaging station.



http://il.water.usgs.gov/pubs/flood_track/floodtrack.html

The locations of the monitors are marked by the red triangles on the following map.



The most recent flood information from August 20, 2007.

Site: 05557500		Real-time Page		
Name: East Bureau Creek near Bureau, IL				
Drainage area: 99.00				
MEASUREMENTS				
Date (mm-dd-yyyy)	Gage Height (ft)	Discharge (cu ft/s)	Rise/Fall	
08-22-2007	8.93	504	Falling	
PEAK				
Date (mm-dd-yyyy)	Gage Height (ft)	Discharge (cu ft/s)	Rank	Recurrence
08-21-2007	11.18	1400		<2
http://il.water.usgs.gov/flooddata/viewData.cgi?date=20070820&q=05557500				

Another reason for floods and damages, especially important in Illinois due to extensive winter weather, is ice jams. They can increase floodwaters faster and attain higher levels than those associated with open water conditions. In Northern communities, ice covers the rivers and lakes annually. They, generally, freeze and breakup without causing problems but some communities face the threat of flooding from ice jams every year.

Ice jams are harder to predict because they are very site specific, they are less common, and poorly documented. The rates of water rise can vary between feet per minute and feet per hour. Risks and damages can be as high as or greater than open water floods because cold temperatures cause other dangers and damages.

Ice jams in the United States cause approximately \$125 million in damages every year. They primarily occur in the Northern states but mountainous regions in New Mexico and Arizona have had ice jam events. The Great Lakes and other navigable inland waterways have been affected through the years.

The following are causes for ice jams to form:

1. River geometries, weather characteristics, and floodplain land-use
2. The area ice is conveyed to has less carrying capacity than the quantity of the ice transported to the area
3. A tributary stream entrance to a larger river, lake, or reservoir where ice may be thicker and frozen. The broken ice from the stream will move until it can not move anymore, collecting at the entrance and causing ice jams
4. Obstructions such as trees or bridge pylons can cause ice jams
5. Removal of dams and structural and operational changes in reservoirs

2.4 Winter Storm Events

In the last century, Illinois has had a severe storm every winter. According to the Illinois Emergency Management Agency (IEMA) there are three categories of winter storms. The three categories are blizzards, heavy snowstorms, and ice storms.

A blizzard will contain low temperatures, heavy snowfall, and winds of 35 mph or greater. The combination of these events leads to low visibility and is therefore the most dangerous of the winter storms. A heavy snowstorm will produce six inches or more of snow in 48-hours or less. An ice storm is when moisture falls and freezes upon impact.

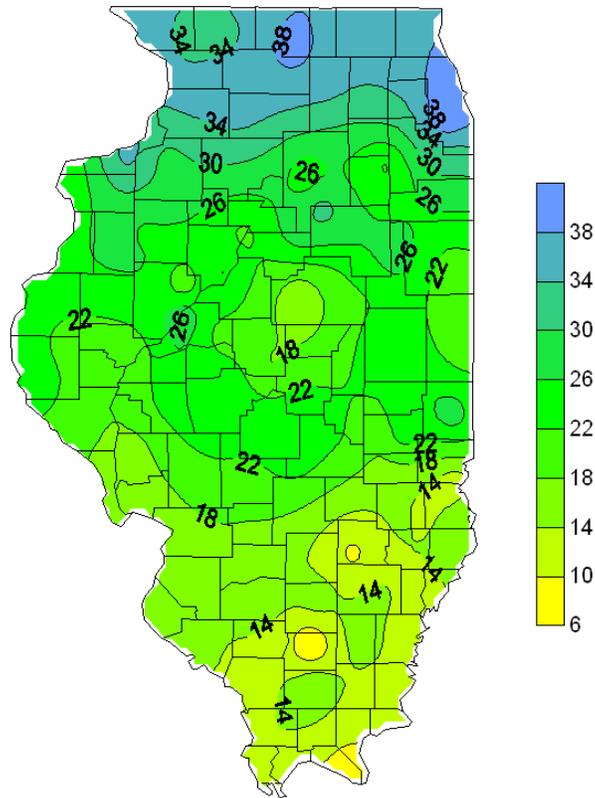
The following table demonstrates the different winter storms, the deaths and injuries, and the damages from 1994 to 2007 in Bureau, Marshall, and Stark Counties. The map below illustrates the annual snowfall for the state of Illinois. Marshall and Stark, though separated below seem to have been combined for injuries, deaths, and damages by the NOAA: National Climatic Data Center. The numbers were the same by date and event for injuries, deaths, and damages.

Winter Events						
01/01/1994 to 02/28/2008						
County	Storm Type	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau						
	Winter Storm	47	0	0	10K	0
	Ice Storm	7	0	0	84K	0
	Heavy Snow	17	0	0	15K	0
	Freezing Rain	4	0	0	0	26.4M
	Total	75	0	0	109K	26.4M
Marshall						
	Winter Storm	17	24	5	0	0
	Ice Storm	4	1	0	0	0
	Heavy Snow	11	21	2	0	0
	Freezing Rain	1	0	0	0	0
	Total	33	46	7	0	0
Stark						
	Winter Storm	17	24	5	0	0
	Ice Storm	5	1	0	0	0
	Heavy Snow	10	21	2	0	0
	Freezing Rain	1	0	0	0	0
	Total	33	46	7	0	0

The above table demonstrates the different winter storms, the deaths and injuries, and the damages from 1994 to 2007 in Bureau, Marshall, and Stark Counties. In Appendix H, the detailed list of events for Bureau, Marshall, and Stark Counties winter storm events is available.

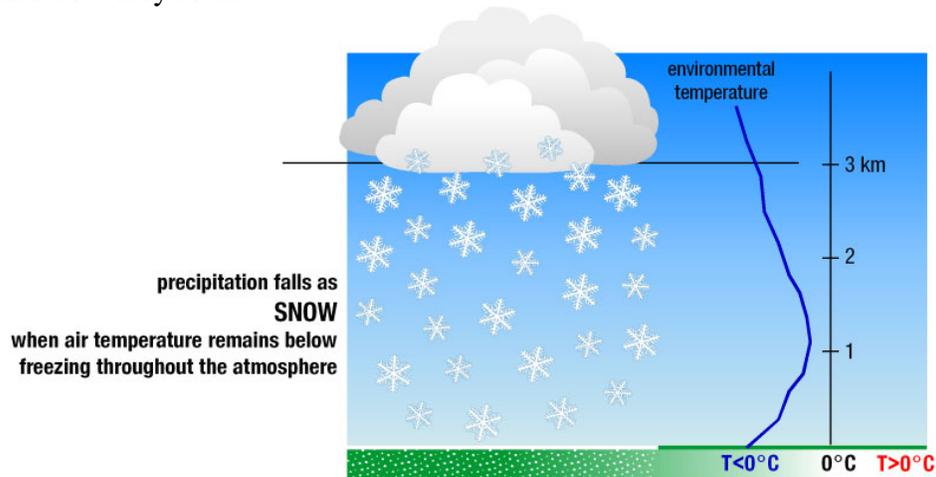
The following map illustrates that Bureau, Marshall, and Stark Counties fall within the 26-34 inches of snow per year area.

1971-2000 Normal Annual Snowfall (in)

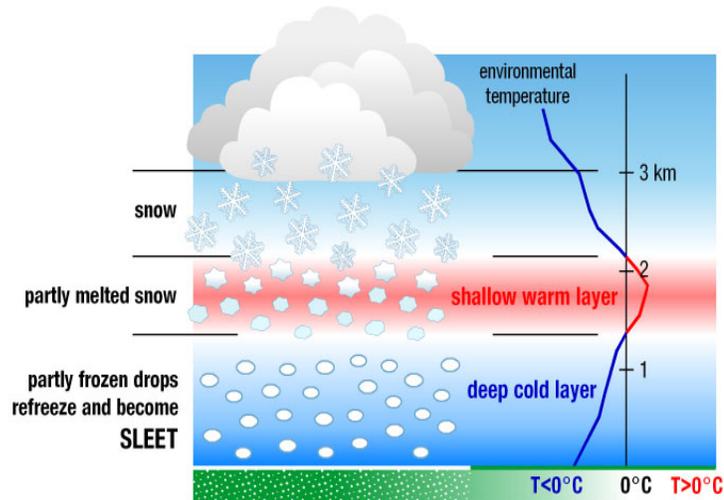


Illinois State Water Survey, Office of the State Climatologist

The following graphics illustrate how snow, sleet, and freezing rain are different and how they form.

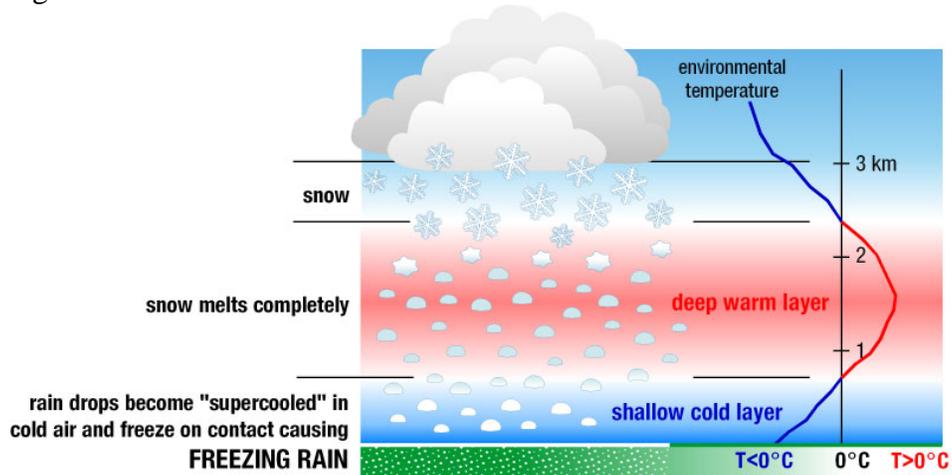


Precipitation falls as snow when air temperature remains below freezing in the atmosphere.



http://www.nssl.noaa.gov/primer/winter/ww_basics.html

Sleet falls when snow partially melts in a warm layer of air and then refreezes in a layer of freezing air.



http://www.nssl.noaa.gov/primer/winter/ww_basics.html

Freezing rain occurs when snowflakes completely melt in a layer of warm air but do not have time to refreeze completely before reaching the surface. The drops are cooled tremendously and instantly freeze when falling on objects below freezing temperature.

The probability of a severe winter storm including heavy snowfall, freezing rain, sleet, and ice storms is 100 percent. The entire region is at risk for a winter storm.

2.5 Drought

Drought is, generally, “a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.” Drought is difficult to define because it will vary from place to place and region to region depending on needs and perspectives. Droughts are a normal, recurrent feature of climate. They affect both developed and developing countries. The entire region is at risk of drought in any given year.

The table below shows the amount of droughts since 2005 in Bureau, Marshall, and Stark Counties and the amount of damage that occurred to the crops due to the drought. The complete list of drought occurrences, by jurisdiction, in Bureau County, Marshall County, and Stark County are available in Appendix H.

Drought					
01/01/2005 to 02/28/2008					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
Bureau	10	0	0	0	228.57M
Marshall	0	0	0	0	0
Stark	0	0	0	0	0
Total	10	0	0	0	228.57M

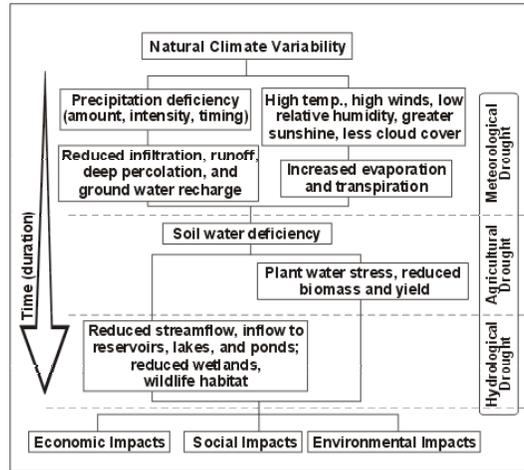
<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

The table below shows the ten driest periods from March to June between the years 1895 to 2005. The average per year precipitation in Illinois is 39-39 inches. The extent of a drought can be seen considering the number 1 rank is only 7.65 inches.

Ten driest March - June periods in Illinois since 1895		
Rank	Year	Precipitation (inches)
1	1936	7.65
2	1988	7.92
3	1934	8.21
3	2005	8.21
5	1992	8.44
6	1895	8.7
7	1971	9.22
8	1914	9.37
9	1930	9.54
10	1987	10.44

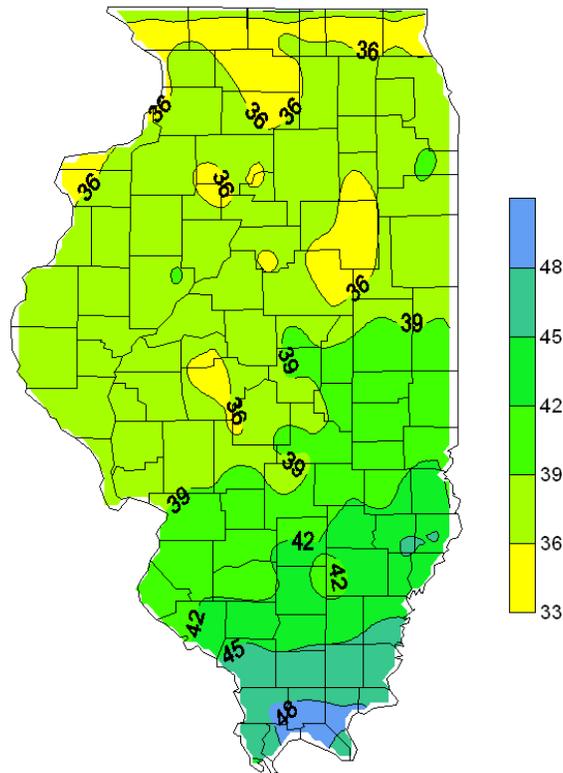
<http://www.sws.uiuc.edu/hilites/drought/figures/DTFFigures20050707.pdf#fig2>

The following chart is an explanation and time scale for the different types of drought that can occur.



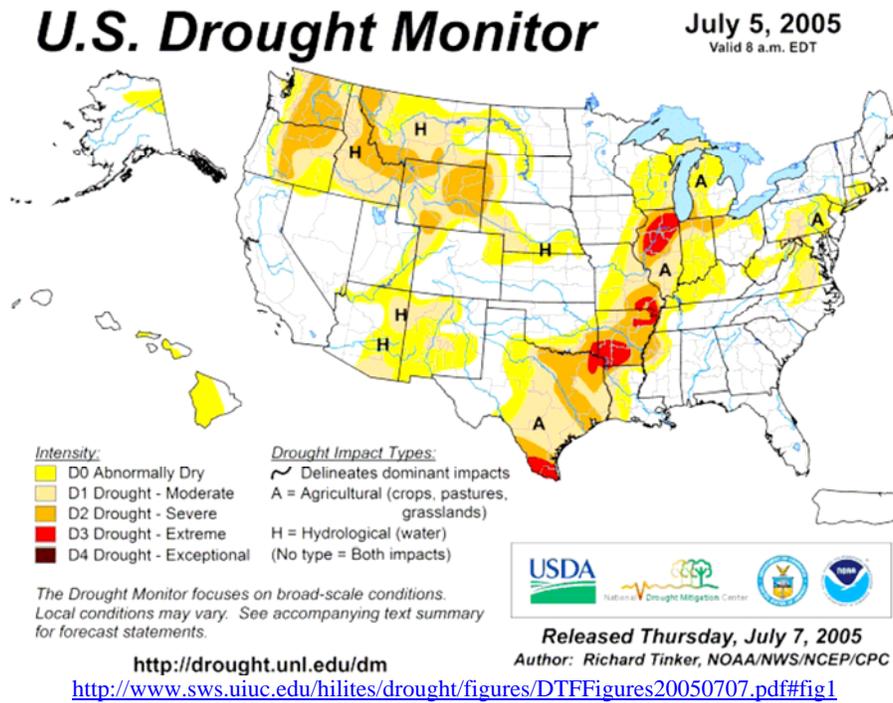
The following map illustrates the annual precipitation for the state of Illinois. Bureau, Marshall, and Stark Counties are in the 36-39 inches per year area with a couple areas below an average of 36 inches per year.

1971-2000 Normal Annual Precipitation (in)



Illinois State Water Survey, Office of the State Climatologist

The map below illustrates the July 5, 2005 drought that included Central Illinois and a stretch of the United States.



2.6 Extreme Temperatures (heat/cold)

Extreme temperatures are a hazard due to the stresses they can put on the human body. Extreme temperatures can be both heat related or cold related.

According to the Red Cross a heat wave is a “Prolonged period of excessive heat and humidity.” The heat index is “A number in degrees Fahrenheit that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15 degrees Fahrenheit.” According to the Center for Disease Control (CDC) more than 350 people die from heat every year.

The body cools itself by sweating. High humidity reduces this evaporation and hinders the body's effort to cool itself. The dew point temperature is a much more useful measure of the moisture content of the atmosphere than the commonly used relative humidity.

The following is a heat index chart. To understand the heat index: Select a temperature and a relative humidity percentage. Where they connect in the chart is the heat index.

Heat Index (Fahrenheit)

Temp	Relative Humidity (%)												
	40	45	50	55	60	65	70	75	80	85	90	95	100
110	136												
108	130	137											
106	124	130	137										
104	119	124	131	137									
102	114	119	124	130	137								
100	109	114	118	124	129	136							
98	105	109	113	117	123	128	134						
96	101	104	108	112	116	121	126	132					
94	97	100	103	106	110	114	119	124	129	135			
92	94	96	99	101	105	108	112	116	121	126	131		
90	91	93	95	97	100	103	106	109	113	117	122	127	132
88	88	89	91	93	95	98	100	103	106	110	113	117	121
86	85	87	88	89	91	93	95	97	100	102	105	108	112
84	83	84	85	86	88	89	90	92	94	96	98	100	103
82	81	82	83	84	84	85	86	88	89	90	91	93	95
80	80	80	81	81	82	82	83	84	84	85	86	86	87

Lans Rothfusz, MIC at NWS Tulsa, OK, NOAA's National Weather Service, Jackson, KY Weather Forecast Office, http://www.crh.noaa.gov/jkl/?n=heat_index_calculator

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130 or higher	Heatstroke or sunstroke likely. Heatstroke possible with prolonged exposure and/or physical activity.
Danger	105-129	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure.
Extreme Caution	90-105	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure.
Caution	80-90	Fatigue possible with prolonged exposure and/or physical activity.

Another heat index chart uses the dewpoint and temperature to figure the heat index.

Heat Index Chart (Temperature & Dewpoint)																
Dewpoint (° F)	Temperature (° F)															
	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
65	94	95	96	97	98	100	101	102	103	104	106	107	108	109	110	112
66	94	95	97	98	99	100	101	103	104	105	106	108	109	110	111	112
67	95	96	97	98	100	101	102	103	105	106	107	108	110	111	112	113
68	95	97	98	99	100	102	103	104	105	107	108	109	110	112	113	114
69	96	97	99	100	101	103	104	105	106	108	109	110	111	113	114	115
70	97	98	99	101	102	103	105	106	107	109	110	111	112	114	115	116
71	98	99	100	102	103	104	106	107	108	109	111	112	113	115	116	117
72	98	100	101	103	104	105	107	108	109	111	112	113	114	116	117	118
73	99	101	102	103	105	106	108	109	110	112	113	114	116	117	118	119
74	100	102	103	104	106	107	109	110	111	113	114	115	117	118	119	121
75	101	103	104	106	107	108	110	111	113	114	115	117	118	119	121	122
76	102	104	105	107	108	110	111	112	114	115	117	118	119	121	122	123
77	103	105	106	108	109	111	112	114	115	117	118	119	121	122	124	125
78	105	106	108	109	111	112	114	115	117	118	119	121	122	124	125	126
79	106	107	109	111	112	114	115	117	118	120	121	122	124	125	127	128
80	107	109	110	112	114	115	117	118	120	121	123	124	126	127	128	130
81	109	110	112	114	115	117	118	120	121	123	124	126	127	129	130	132
82	110	112	114	115	117	118	120	122	123	125	126	128	129	131	132	133

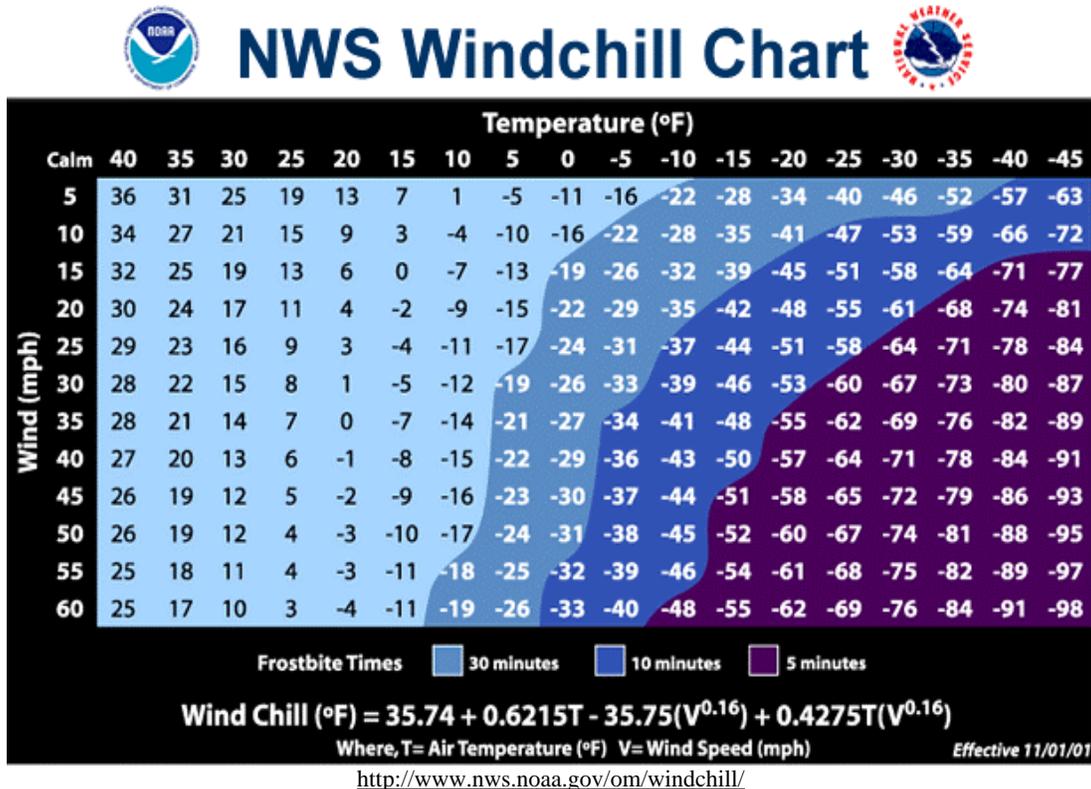
Note: Exposure to full sunshine can increase HI values by up to 15° F

<http://www.ncdc.noaa.gov/oa/climate/conversion/heatindexchart.html>

Extreme cold temperatures are a hazard to everyone as well. The most susceptible to cold are the elderly and infants. In the United States, deaths related to ice and snow occur approximately 70% of the time in automobiles and approximately 25% of the deaths are people caught out in a storm. The majority of deaths are males over 40 years old. Deaths that occur due to exposure to cold are people over 60 years old approximately 50% of the time and over 75% are males. Approximately 20% of cold related deaths occur in the home. Overexertion in the winter can be dangerous because cold weather puts a strain on your heart. Regardless of your age, people should be aware and be careful.

Other factors can affect extreme cold besides the temperature. Temperature and wind speed together produce a wind chill factor. “The wind chill is based on the rate of heat loss from exposed skin caused by the combined effects of the wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature.” The wind chill shows how cold the wind makes exposed flesh feel.

The following chart is a wind chill chart. Find the temperature and the wind speed. Where they connect in the middle is the wind chill.



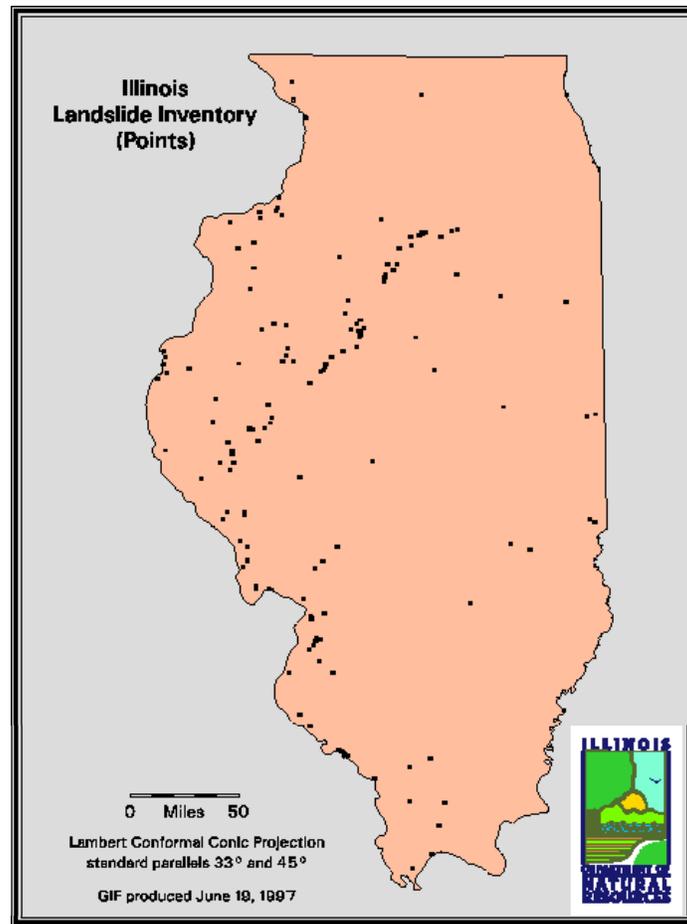
Fully detailed extreme temperature events for Bureau, Marshall, and Stark Counties are included in Appendix H. In Bureau, Marshall, and Stark Counties, the probability of extreme cold is between 12 and 15 percent in any given year while the probability for extreme heat in any given year ranges from 3 to 5 percent. However, the entire region is at risk for extreme temperatures.

2.7 Landslides

Landslides constitute a major geologic hazard because they are widespread, occur in all 50 states and U.S. territories, and cause \$1-2 billion in damages and more than 25 fatalities on average each year. Landslides commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods.

According to the American Red Cross landslides can move slowly and cause damage gradually or move very rapidly destroying property and taking lives suddenly. Gravity is the force that drives landslide movement. Factors that allow the force of gravity to overcome the resistance of earth materials are saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, and earthquakes.

Debris flows, also referred to as mudslides or mudflows are common types of fast-moving landslides. These flows generally occur during periods of intense rainfall or rapid snowmelt. They continue flowing down hills and through channels, growing in volume with the addition of water, sand, mud, boulders, trees, and other materials. When the flows reach flatter ground, the debris spreads over a broad area. The probability for a landslide in Bureau, Marshall, and Stark Counties is undetermined.



<http://www.isgs.uiuc.edu/nsdihome/browse/statewide/Indslld85-ptb.gif>

In nearby Streator, IL, however, in March of 2007, had a landslide event occur along the eastern bank of the Vermillion River, just south of the Main Street Bridge near the downtown. The slide caused two local businesses to close and the City is currently looking into means to buyout the properties. Historically, in 1956, a flood damaged hundreds of structures. Because of this flood, a levee was constructed along the west bank of the River.

2.8 Wildfires

The following map shows the locations that experienced wildfires greater than 250 acres, between 1980 and 2000, in the United States. The region where Bureau, Marshall, and Stark Counties are located has no past occurrence of large wildfires. The probability of wildfires in Bureau, Marshall and Stark Counties is undetermined.



July 24, 2006, http://geology.com/news/2006_07_01_archive.html

2.9 Conclusions

The State of Illinois Natural Hazards Mitigation Plan, October 2004, determined and concluded the hazard risks for Bureau, Marshall, and Stark Counties according to a methodology from the 2004 Illinois Natural Hazard Mitigation Plan (see Appendix I). The Risk Assessment for the jurisdictions within Bureau, Marshall, and Stark Counties followed the same methodology. The results can be seen below. The charts used to create the results can be seen in Appendix J.

Source: 2004 Illinois Natural Hazards Mitigation Plan, October 2004, page 31-32.

Bureau County Risk Assessment								
Communities & Institutions	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Bureau County	Elevated	Guarded	High	Elevated	Severe	Elevated	Guarded	Elevated
Buda	Elevated	Elevated	High	High	High	Elevated	Elevated	High
DePue	Elevated	Elevated	High	High	High	Elevated	Elevated	High
LaMoille	Elevated	Elevated	High	High	High	Elevated	Elevated	High
Princeton	Elevated	Elevated	High	High	High	High	Elevated	High
Seatonville	Elevated	Elevated	High	High	High	Elevated	Elevated	High
Spring Valley	Elevated	Elevated	High	High	High	Elevated	Elevated	High
Tiskilwa	Elevated	Elevated	High	High	High	Elevated	Elevated	High
Walnut	Elevated	Elevated	High	High	High	Elevated	Elevated	High

Marshall County Risk Assessment								
Communities & Institutions	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Marshall County	Elevated	Guarded	Severe	High	Severe	Severe	Guarded	Elevated
Henry	Guarded	Elevated	Severe	High	High	N/A	N/A	High
Lacon	Guarded	Elevated	Severe	High	High	N/A	N/A	High
Sparland	Guarded	Elevated	Severe	High	High	N/A	N/A	Elevated
Toluca	Guarded	Elevated	Severe	Severe	High	N/A	N/A	Elevated
Wenona	Guarded	Elevated	Severe	High	High	N/A	N/A	Elevated

Stark County Risk Assessment								
Communities & Institutions	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Stark County	Elevated	Guarded	Severe	High	High	High	Guarded	Elevated
Bradford	Guarded	Guarded	Severe	High	High	N/A	N/A	High
Lafayette	Guarded	Guarded	Severe	High	High	N/A	N/A	Elevated
Toulon	Guarded	Elevated	Severe	Severe	High	N/A	N/A	High
Wyoming	Guarded	Elevated	Severe	High	High	N/A	N/A	Elevated

From the list of hazards that can occur in the area, severe winter storms, severe summer storms, extreme cold, extreme heat, and tornados are an equal threat to **all areas** in Bureau County. Floods are hazardous to communities that are within the floodplains in the area. These communities include Bureau Junction, DePue, Princeton, Tiskilwa, and Walnut. The following table shows a more complete list of the hazards identified for each of the communities comprised within Bureau County:

Participating Communities	Severe Winter Storms	Severe Summer Storms	Extreme Cold	Extreme Heat	Tornado	Flood
Bureau County	X	X	X	X	X	X
Arlington	X	X	X	X	X	
Buda	X	X	X	X	X	
Bureau Junction	X	X	X	X	X	X
Cherry	X	X	X	X	X	
Dalzell	X	X	X	X	X	
DePue	X	X	X	X	X	X
Dover	X	X	X	X	X	
Hollowayville	X	X	X	X	X	
Ladd	X	X	X	X	X	
LaMoille	X	X	X	X	X	
Malden	X	X	X	X	X	
Manlius	X	X	X	X	X	
Mineral	X	X	X	X	X	
Neponset	X	X	X	X	X	
New Bedford	X	X	X	X	X	
Ohio	X	X	X	X	X	
Princeton	X	X	X	X	X	X
Seatonville	X	X	X	X	X	
Sheffield	X	X	X	X	X	
Spring Valley	X	X	X	X	X	X
Tiskilwa	X	X	X	X	X	X
Walnut	X	X	X	X	X	X
Wyanet	X	X	X	X	X	

Severe winter storms, severe summer storms, extreme cold, extreme heat, and tornados have the probability of occurring **anywhere** within Marshall County. The floodplains are more specific and include risks for the communities of Lacon, Sparland, and Toluca. The complete list of natural hazards determined for all the communities within Marshall County have been identified below:

Participating Communities	Severe Winter Storms	Severe Summer Storms	Extreme Cold	Extreme Heat	Tornado	Flood
Marshall County	X	X	X	X	X	X
Camp Grove	X	X	X	X	X	
Henry	X	X	X	X	X	X
Hopewell	X	X	X	X	X	
Lacon	X	X	X	X	X	X
Larose	X	X	X	X	X	
Sparland	X	X	X	X	X	X
Toluca	X	X	X	X	X	X
Varna	X	X	X	X	X	
Washburn	X	X	X	X	X	

The majority of Stark County is affected by all the natural hazards that were identified to occur in this area. These hazards include severe winter storms, severe summer storms, extreme cold, extreme heat and tornados. All communities in Stark County except for La Fayette are affected by flooding. The natural hazards in Stark County communities are identified in the table below:

Participating Communities	Severe Winter Storms	Severe Summer Storms	Extreme Cold	Extreme Heat	Tornado	Flood
Stark County	X	X	X	X	X	X
Bradford	X	X	X	X	X	X
La Fayette	X	X	X	X	X	
Toulon	X	X	X	X	X	X
Wyoming	X	X	X	X	X	X

2.9 References

2004 Illinois Natural Hazards Mitigation Plan

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web.extension.uiuc.edu/disaster/winter/ws_cold.html

www.redcross.org/services/disaster/0,1082,0_588_,00.html

Chapter 3: Vulnerability Assessment

Assessing the vulnerability of a community is a necessary step in the NHMP process. Planning must be based on a reasonable assessment of hazards and the damages that may accompany them.

Many factors are used to determine the vulnerability of structures. Bureau, Marshall, and Stark Counties have over 55,000 residents; therefore, there are thousands of people, homes, businesses, and lands that have the potential to be damaged from a natural hazard. This chapter reviews the vulnerability of the Counties to public health and safety, property damage, and the adverse impact on the local economy. All the counties have to pay close attention to the impacts on health, safety, property, and the economy because all the counties are growing.

Hazards create many damages. Direct damages are those caused immediately by the event. Indirect damages are disruptions in asset operations and community functions. Secondary hazards are caused by the initial hazard event, such as a landslide that is caused by an earthquake.

The methodology used to determine vulnerability is as follows:

1. Select and inventory categories of property subject to damage.
 - A. Determine five categories (See below under section 3.1)
 - B. Use Census 2000 and HAZUS software to compute totals.
2. Determine how the hazard can affect safety, health, buildings, and the economy.
3. Determine the average cost of buildings per square foot as well as the replacement costs for structures.

Note: This is an **average** cost per square foot for the general category of building. This information is from the HAZUS software.
4. Calculate the impact.

3.1 Properties

Five categories of buildings were assessed to determine the vulnerability to property damage in Bureau, Marshall, and Stark Counties.

1. **Single Family Housing** – A popular housing structure chosen because many residents own and live in single-family housing.
2. **Manufactured Housing** – A very vulnerable housing structure chosen due to the risks from natural hazards.
3. **Multi-family Structures** – Chosen because many people live in apartments and their vulnerability needs to be assessed as much as single family housing.
4. **Economic Establishments (including retail, commercial, and factory)** – Natural hazards can affect the economy, which in turn affects everyone, so the vulnerability needs to be assessed.
5. **Non-Residential Structures (including all critical facilities, as well as churches)** – This category was selected because a general assessment of costs to the rest of the structures within a community will help to prepare for losses. Critical facility costs are a necessary need for a community to start and continue aid in a disaster situation.

Assessing these categories of structures allows for determination of the relative vulnerability of properties from the hazards facing Bureau County, Marshall County, and Stark County.

The number of buildings in categories 1-4 is shown in the following table. The critical facilities table, which includes schools, is the following table.

Buildings in Bureau, Marshall, and Stark Counties					
County	Single Family Homes	Manufactured Homes	Multi-family Structures	Economic Establishments	Total
Bureau	13005	574	1743	557	15879
Marshall	5231	277	406	189	6103
Stark	2333	138	254	70	2795
Totals	20569	989	2403	816	24777

There are approximately 239 Non-Residential Structures in Bureau County, Marshall County, and Stark County. Values were found using Census 2000 data, from FEMA's *Understanding Your Risks* and FEMA's HAZUS software.

The following chart contains the number of critical facilities within the three-county area. Included are communities that opted not to participate in this plan, however, the information is imperative to determining potential dollar losses.

Critical Facilities										
City	Public Safety				Schools	Utilities	Nuclear Power Plant	DAMS	Hazardous Materials	Total
	Medical Care Facilities	Police Stations	Fire Stations	Emergency Centers						
Arlington			1							1
Bradford			1			1				2
Buda										0
Bureau Co								13		13
Bureau Junction										0
Camp Grove			1							1
Cherry			1		1	1				3
Dalzell			1		1	1				3
DePue		1	1		1	2				5
Dover						1				1
Hollowayville										0
Henry		1	1	1	2	4			3	12
LaMoille		1	1		2	1				5
Lacon		2	1	1	1	1				6
Ladd		1	1			1			1	4
La Rose						1				1
Magnolia						1				1
Malden			1		1	1				3
Manlius			1		1	1				3
Marshall Co								4		4
Mineral										0
Neponset		1	1		1				1	4
New Bedford										0
Ohio			1		2	1				4
Princeton	1	2	1	1	8	6			2	21
Seatonville			1			1				2
Sheffield		1	1			1				3
Sparland						2				2
Spring Valley	1	1	1		3	1			2	9
Stark Co								3		3
Tiskilwa			1			1				2
Toluca		1				1				2
Toulon		1	1			1				3
Varna					1					1
Walnut		1	1		1	1				4
Wenona		1	1	1	2	1				6
Wyandot			1		1	1				3
Wyoming			1		2	1			1	5
Total	2	15	24	4	31	36	0	20	10	142

The following sections assess how the hazard can affect safety, health, the economy, and structures.

3.2 Flood

Safety:

Threats to life and safety can be avoided if people are able to evacuate before floodwaters reach their homes or their evacuation routes. Forewarning is required if people are to leave their homes and reach their evacuation routes before floodwaters halt their passage. The National Weather Service river level predictions and gages along the Illinois River should allow for ample time of notification to the public. Smaller streams, however, rise so rapidly during heavy storms that prediction equipment still may only be able to give residents enough time to get to higher ground.

People often put themselves in harms way during a flood. People mistakenly think a washed out bridge is still there or that their vehicle will not wash away on a flooded roadway. Six inches of fast moving water can knock you off your feet and 2 feet of moving water can carry away a vehicle.

Health:

Three types of health issues accompany floods. They are listed below:

1. The water itself, in floods, is a mix of whatever was on the surface. The waters carry dirt, oils, industrial and agricultural chemicals, as well as other point and non-point source pollutants.
2. The residual pools of water after the floodwaters have receded become stagnant and breed mosquitoes, molds, and mildews.
3. Post-traumatic stresses of having your home and irreplaceable valuables destroyed. For those in the floodplain, there is the chance of floods reoccurring and a chance of more loss and damages.

Economy:

According to the CRS Report for Congress, some of the economic consequences of flooding are:

1. The cost of emergency services accepted by state and local governments.
2. Reductions in government revenue, such as sales tax and property tax revenues, due to business interruption or business destruction.
3. Dollar value of flood-related deaths, bodily injury and mental anguish suffered by victims.
4. Post-disaster outlays by the federal government, such as loans and direct financial assistance to individuals for emergency housing, food, and clothing.

Economic impacts because of floods can be difficult to measure. Businesses may have to close, inventories and product could be compromised, and employees may not be able to get to work. Roads and bridges may be flooded, and clean up and flood-fighting costs are the responsibility of the community. Flooded agricultural tracts can be a loss of an entire season's crop.

Flood loss statistics From Jan 1,1978 through June 30, 2008		
	Total Losses	Total payments
Bureau County	1	\$2,130.76
Village of Buda	0	\$0.00
Village of DePue	9	\$12,054.02
City of Princeton	9	\$45,565.06
Village of Seatonville	0	\$0.00
Village of Sheffield	0	\$0.00
City of Spring Valley	10	\$22,137.48
Village of Tiskilwa	1	\$2,908.26
Village of Walnut	4	\$1,635.55
Village of Wenona	0	\$0.00
Total	33	\$86,431.13

Flood loss statistics From Jan 1,1978 through June 30, 2008		
	Total Losses	Total payments
Marshall County	3	\$40,550.31
Village of Henry	21	\$108,552.98
City of Lacon	0	\$0.00
City of Toluca	0	\$0.00
Total	3	\$149,103.29

Flood loss statistics From Jan 1,1978 through June 30, 2008		
	Total Losses	Total payments
Stark County	0	\$0.00
Village of Bradford	1	\$0.00
Village of Lafayette	0	\$0.00
City of Toulon	0	\$0.00
City of Wyoming	0	\$0.00
Total	1	\$0.00

<http://bsa.nfipstat.com/reports/1040.htm#17>

The state of Illinois had 35,090 total losses from January 1, 1978 through June 30, 2008. The amount of losses totaled \$246,433,407.95 for the state. Bureau County, Marshall County, Stark County, and the municipalities within composite less than one percent of the states total losses from flooding.

Structures:

Floods can cause interior and structural damage to buildings, residential and commercial. Interior damage occurs from the water and the residues and contaminants that are left when the water recedes. The structural damage occurs from the velocity of water flow and the debris that comes with the flood. Materials will also deteriorate from long exposure to water and to moist air. Woods, wallboards, and floors can warp from being wet and then drying out.

3.2.1 Repetitive Loss Properties (RLPs)

Flooding is the most common natural disaster in the U.S. The Community Rating System (CRS) defines a RLP as a property that has received two flood insurance claim payments, for at least \$1000 each, since 1978. RLPs are 2% of the policy base, but are 33% of the insurance claim payments.

Four factors contribute to the RLP problem:

1. The National Flood Insurance Program (NFIP) has not excluded pre-FIRM structures from receiving subsidies. This leads RLPs to a disproportionate share of flood claim payments.
2. Properties that do not sustain over 50% damages are not required to rebuild to floodplain management standards, which are designed to reduce more future losses.
3. Many RLPs are outside of the 100-year floodplain. The rates for these properties have not been assessed by NFIP properly.
4. Flood map accuracy is questionable due to some buildings not even being shown in on a FIRM, when the property is in a flood prone area.

From 1978 - 2004 Illinois has:

1. The total number of RLPs was 2,810. Of those, 624 were insured.
2. The total RLP Claims was 8,430. Of those, 2,022 were insured.
3. The total dollar loss for RLPs was \$83,226,346
4. The total dollar loss for insured RLPs was \$25,497,041

The following chart is the statistics for the RLPs within Bureau, Marshall, and Stark Counties.

Bureau County, Marshall County, and Stark County Repetitive Loss Properties									
Place	County			Type of Property			# Of Claims	Amount of Loss	
	Bureau	Marshall	Stark	Residential		Non-Residential		Building	Contents
				Single Family	Multi-family				
Sparland		X		X			2	\$10,511.08	\$0.00
Sparland		X		X			3	\$20,514.10	\$0.00
Sparland		X		X			2	\$13,863.61	\$0.00
Henry		X		X			4	\$17,211.70	\$3,133.00
DePue	X			X			2	\$2,197.44	\$2,014.00
Total	1	4	0	5	0	0	13	\$64,297.93	\$5,147.00

3.2.2 Local Drainage Problems

Safety and Health:

Local drainage problems, such as septic system flooding, can be a safety and health problem if not fixed. Septic systems flooding can create a bacteria infected area. Repetitive flooding of sewage or water creates an easier chance for mold, mildew, and other bacteria and disease to occur.

Economy:

The largest economic strain from local drainage problems is the cost of pipe and drain maintenance on the smaller communities. It is a necessary, yet costly figure in budgets. Most drainage issues do not hurt the overall economy for more than a few hours. Generally, a street pond will not generate enough liquid or damage to close a street.

Structures:

The flooding of lower portions of buildings, such as basements, is possible with insufficient drainage. Damage to structure, as well as contents can occur. Local drainage affects buildings similarly to overbank flooding.

3.3 Thunderstorms

Health and Safety:

Remove dead or rotting trees and branches that could fall and cause injury or damage during a severe thunderstorm. Flying debris is a hazard during a thunderstorm. Secure outdoor objects that could blow away or cause damage.

Economy:

Thunderstorms and their effects have the capability to halt transportation and utilities. Downed power lines and power surges can cause havoc and lack of power to thousands of consumers. Straight-line winds cause more wind damage annually than tornados.

Buildings:

Mobile homes are the most vulnerable to damage from thunderstorms. Straight-line winds can push over mobile homes or knock them off their foundations. Wind and water damage can cause losses on any structure, if flying debris or hail damages windows or roofs.

3.3.1 Lightning

Safety:

Lightning is very unpredictable and can strike where rain is not present. Your chances of being struck by lightning are estimated to be 1 in 600,000, but could be reduced even further by following safety precautions. Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening. Get inside a home, building, or hard top automobile (not a convertible). Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside. Avoid showering or bathing. Plumbing and bathroom fixtures can conduct electricity.

FEMA suggests that people remember the 30/30 lightning safety rule. This rule is as follows: Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder. Stay indoors for 30 minutes after hearing the last clap of thunder.

Health:

Lightning strike victims carry no electrical charge and should be attended to immediately. If a victim has a pulse and is breathing, look for other possible injuries. Check for burns where the lightning entered and left the body. Also be alert for nervous system damage, broken bones, and loss of hearing and eyesight. If there is no pulse administer CPR, when trained.

Economy:

Unplug appliances and other electrical items such as computers and turn off air conditioners. Power surges from lightning can cause serious damage.

Structures:

Buildings usually have lightning rods or backup generators, which recover quickly or take over when power fails. Unprotected buildings and land have the potential to burn from a lightning strike.

3.3.2 Hail

Health and Safety:

The greatest danger from hail is impact at a high velocity. Hail can vary in sizes as small as a pea to as large as a grapefruit. Large hail can fall at speeds over 100 MPH. If outdoors cover your head by any means possible.

Economy:

Hail can cause damage to vehicles, usually broken or shattered windows. The damage to buildings and recovery will vary depending on quantity of damage. Crop damage can also be very high depending on the extent and area of a hail event.

Structures:

Hail can inflict damage to roofs, windows, and siding. Damage will vary depending on the size of the hailstone.



www.hailcanopy.com

3.3.3 Tornadoes

Safety:

There is no guarantee for safety within a tornado. Flying debris (such as trees, house parts, or vehicles) is a serious hazard. Vehicles and mobile homes are extremely dangerous places to be. Vehicles tend to get rolled by tornadoes and mobile homes, even if tied down, get destroyed. Stronger tornadoes can remove houses from their foundations and miss other houses completely. There is no guarantee that your house will remain standing and in one piece.

After a tornado, be aware of new safety issues created by the disaster. Watch for washed out roads, unsafe and unstable buildings, contaminated water, gas leaks, broken glass, damaged electrical wiring, downed power lines, and slippery floors.

Health:

After a tornado, be careful of further injuring yourself or the injured. Only move someone if they are in danger of further injury. If an unconscious person must be moved, stabilize the neck and back first. Care for yourself. Make sure to get plenty of fluids, food, and rest. Washing hands when working with people and debris will help to halt disease and infection as well.

Economy:

Most of the economic impact is to infrastructure and utilities. There is also a cost to clean up and debris removal.

Structures:

Tornados may strike quickly with little or no warning. With or without warning, freak accidents happen. All buildings are vulnerable; the following three structures are more likely to suffer damage:

1. Mobile or manufactured homes
2. Homes on crawlspaces
3. Buildings with large spans, such as shopping malls, factories and gymnasiums.

At one time, it was thought that tornados created a vacuum that caused houses to explode. Researchers now know that this “vacuum” has no effect on the destruction caused by tornadoes. Gravity must be taken into account for the structure to be sound but too often designers rely on gravity for structural stability. Tornados, however, counteract gravity. Research has shown that a tornado exerts an upward force on a building up to 10 times as strong as the force of gravity.

A 1999 FEMA study concludes that many residential building failures could have been avoided with better construction, materials, and connections. The tornado assessment teams saw significant damage to hundreds of single-family homes, multi-family housing and manufactured homes. The building failures resulted from wind-borne debris and high winds that often produced forces on buildings not designed to withstand such forces.

FEMA appeals to homeowners, businesses, and communities to do the following regarding prevention and tornados *when feasible*:

1. Urge local officials in tornado areas to enforce the latest model building codes and national consensus wind engineering standards.
2. Urge local officials in tornado areas to take steps to ensure that manufactured homes are installed and secured properly.
3. Urge insurance companies to offer lower rates to people who reduce their risks by securely anchoring their manufactured homes or putting them on a permanent foundation.
4. Urge homeowners in tornado states to find out whether or not their homes meet the most recent model building codes and standards. And if not to upgrade their home to meet the newest standards.
5. Make sure that architectural features of your home are designed, manufactured and installed to limit the creation of wind-borne debris. Make sure your doorframes are anchored strongly to the house.
6. Make sure your garage doors comply with the latest national wind loads standards. Make sure garage doors are up to current codes and standards. Retrofit your existing garage doors to improve their resistance against high winds.



The above photo is of the damage caused by the April 20, 2004 tornado, which hit Utica, IL.

3.4 Winter Storms & Extreme Cold Temperatures

Health and Safety:

According to National Weather Service about 70 percent of injuries during winter storms result from vehicle accidents, and about 25 percent of injuries result from being caught out in the storm.

Frostbite is a severe reaction to cold exposure that causes freezing in the deep layers of skin and tissue. Frostbite can cause permanent damage. It is recognizable by a loss of feeling and a waxy-white or pale appearance in fingers, toes, nose, or ear lobes. It usually occurs on the body's extremities.

Hypothermia occurs when the body temperature drops to less than 95°F. Symptoms of hypothermia include uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness, and exhaustion. According to OSHA, victims of hypothermia are often

1. Elderly people and infants with inadequate food, clothing, or heating
2. People who remain outdoors for long periods, such as the homeless or hunters
3. People who drink alcohol or use illicit drugs
4. People with predisposing health conditions such as cardiovascular disease, diabetes, and hypertension
5. People that take certain medication
6. People in poor physical condition or who have a poor diet.

OSHA lists some of hazards that are associated with working in winter storms, which also can affect people in general whether working, or not. These include:

1. Driving accidents due to slippery roadways
2. Carbon monoxide poisoning
3. Slips and falls due to slippery walkways
4. Hypothermia and frostbite due to the cold weather exposure
5. Being struck by falling objects such as icicles, tree limbs, and utility poles
6. Electrocutation due to downed power lines or downed objects in contact with power lines
7. Falls from heights (e.g. falls from roof or skylights while removing snow)
8. Roof collapse under weight of snow (or melting snow if drains are clogged)
9. Burns from fires caused by energized line contact or equipment failure
10. Exhaustion
11. Dehydration

Economy:

Snow and ice affect transportation and utilities. Utilities can be weighed down by ice and snow. Tree limbs also become weighed down and collapse on wires, homes, and businesses. If there is no power businesses are unable to open.

Keeping roads open to the residents, travelers, and the public is a great expense to communities. If roads close during or after storms it has an effect on local businesses as well as outlying businesses.

Winter storms will impact retail sales and housing activity but there is an impact on payrolls because many people become temporarily out of work by a major snow event. There are significant impacts that are not consistently measured because they are more indirect. These effects can have national and global economic implications.

Structures:

The accumulation of snow can cause roofs to collapse. The winters in Illinois have a tendency to be cold and harsh. General building and construction of homes now consider snow, ice, and extreme cold. Buildings are insulated far more and much more than in the past, which helps the Northern Midwest climate where winter storms are prevalent.

3.5 Earthquakes

Safety:

FEMA has some recommendations to ready your house for an earthquake. They are as follows:

1. Fasten shelves securely to walls and place large or heavy objects on lower shelves.
2. Hang heavy items such as pictures and mirrors away from beds, couches, and anywhere people sit.
3. Repair defective electrical wiring and leaky gas connections. These are potential fire risks. Be sure to brace overhead light fixtures.
4. Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects.

Precautions to take if you feel an earthquake begin are, as suggested by FEMA:

1. Get under something sturdy and hold on
2. Cover neck or head with something soft
3. If outside remain outside away from trees, buildings, and utilities
4. If inside, remain inside and get under something sturdy and hold on
5. Stay away from windows, walls and anything that could fall or collapse

Health:

After an earthquake, be careful of further injuring yourself or the injured. Only move someone if they are in danger of further injury. If an unconscious person must be moved, stabilize the neck and back first. Care for yourself. Make sure to get plenty of fluids, food, and rest. Washing hands when working with people and debris will help to halt disease and infection as well.

Economy & Structures:

Most of the economic impact is to infrastructure and utilities. There is also a cost to clean up and debris removal.

3.6 Drought & Extreme Heat

Safety:

Communities can help their residents understand the dangers of drought and extreme heat by doing the following:

1. Publish a special section with emergency information on extreme heat including dangers of sunburn, heat exhaustion, heat stroke, and other possible conditions
2. Localize the information by including the phone numbers of local emergency services offices, the American Red Cross, and hospitals.
3. During a drought, explain ways that individuals can conserve water and energy in their homes and their workplaces.
4. Be aware of special steps farmers can take to establish alternative water supplies for their crops.
5. Have programs through the local school system to encourage children to think of those persons who require special assistance such as elderly people, infants or people with disabilities during severe weather conditions

During extreme heat, people should remain out of the sun as much as possible. Remaining indoors is best. Spending the warmest part of the days in public buildings with air conditioning is recommended. Checking on others, who don't have air conditioning, can also be a life saving measure.

Health:

Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat. Heat kills by pushing the human body beyond its limits. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. People living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas.

Economy:

Water and electricity use will go up during a heat wave or drought. Water bans, such as those forbidding the watering of lawns, are a reasonable means to conserve water.

Drought and heat waves can have a major affect on the agricultural sectors. Crops suffer from lack of water and relief from extreme heat. If crops are affected there is a ripple affect throughout the economy with supplies and price fluctuations.

Structures:

There are measures that can be taken to keep houses and buildings cool. These measures include:

1. Window air conditioners properly installed
2. Air conditioning ducts properly insulated
3. Weather strips and seals around windows and doors
4. Awnings and drapes to keep sunlight out
5. Proper attic and wall insulation

Damages normally do not occur to buildings because of drought or extreme heat or humidity.

3.7 Local Area Assessment

The following tables are the square footages of the buildings in Bureau, Marshall, and Stark Counties. The table is divided by the five categories of property determined on page 3-1.

Marshall County Sq Ft		Bureau County Sq Ft	
SFH	7,245,682	SFH	17,922,171
MH	293,672	MH	621,595
MFH	395,061	MFH	1,611,849
Economic Establishments	167,890	Economic Establishments	903,960
Non-Residential Structures	622,290	Non-Residential Structures	2,907,760

Stark County Sq Ft	
SFH	3,195,468
MH	146,678
MFH	245,146
Economic Establishments	171,140
Non-Residential Structures	474,810

The table below is the **average** mean cost per square foot for the different housing/ building types in Bureau, Marshall, and Stark Counties. The information was gathered from FEMA’s HAZUS software.

Building	Mean cost/ sq ft
Single Family Housing	\$88.90
Manufactured Housing	\$61.47
Multi Family Structures	\$93.67
Economic Establishments	\$85.07
Non-residential Structures	\$105.17

The following tables are the estimated average replacement costs for the different types of buildings within LaSalle County and Putnam County. The information was gathered from FEMA’s HAZUS software.

Replacement Costs Bureau County						
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
\$1,830,491,000	\$202,365,000	\$36,499,000	\$25,317,000	\$16,312,000	\$4,266,000	\$33,594,000

Replacement Costs Marshall County						
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
\$721,522,000	\$46,150,000	\$7,786,000	\$7,221,000	\$6,311,000	\$935,000	\$0

Replacement Costs Stark County						
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
\$325,467,000	\$25,140,000	\$2,890,000	\$13,415,000	\$5,672,000	\$734,000	\$3,778,000

3.8 References

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Chapter 4: Preventive Measures

Preventive measures are designed to protect new and future construction and development from hazards and potential losses. Preventive measures include:

1. Building codes
2. Floodplain management
3. Manufactured Housing regulations
4. Open Space regulation
5. Planning and Zoning
6. Stormwater management
7. Subdivision regulations

The Community Rating System (CRS) accounts for many of these preventive measure elements through the scoring system. Like every bureaucratic element, there is paperwork and applications that must be filled out by the community. Communities may have CRS projects already in progress.

Development in Bureau County:

Preventive measures are important in Bureau County to protect the population. Between the years of 1990 and 2000 the population dropped from 35,688 to 35,503. The County should consider updating their comprehensive plan and incorporating the relevant NHMP goals. The communities in Bureau County, such as Princeton, should consider measures suitable for the current population.

Development in Marshall County:

Marshall County's population grew from 12,846 in 1990 to 13,180 in 2000. If the trend continues in a positive direction, the 2010 Census could see another increase in population. Marshall County and the municipalities within should consider the protective measures relevant to protecting a growing population.

Development in Stark County:

Stark County's population lessened from 6,534 in 1990 to 6,332 in 2000. A small community with a small population does not make the potential damages from a natural disaster any less. Stark County and the communities within should consider implementing some protective measures to protect the population and their property.

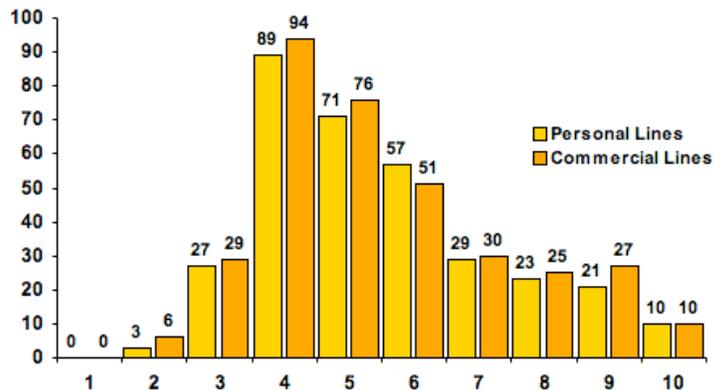
4.1 Building Codes

Building codes are the primary measure for protecting new properties from damage by hazards. When properly designed and constructed, the average building can withstand the impacts from the aforementioned hazards. Hazard protection standards can and should be incorporated into the local building codes for all new and renovated buildings.

The Building Code Effectiveness Grading Schedule (BCEGS) assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The idea is to lessen the losses and the costs of insurance by maintaining and enforcing an appropriate building code. In the Bureau, Marshall, and Stark Counties area this could include protection from high wind.

The BCEGS program assigns each municipality a BCEGS grade of 1 to 10. One is the most exemplary commitment to building code enforcement. ISO¹ develops advisory rating credits that apply to ranges of BCEGS classifications (1-3, 4-7, 8-9, 10). ISO gives insurers BCEGS classifications, BCEGS advisory credits, and related underwriting information. ISO began implementing the program in states with high exposure to wind (hurricane) hazards, then moved to states with high seismic exposure, and then continued through the rest of the country.

Distribution of Communities by BCEGS Class



<http://www.isomitigation.com/bcegs/1000/graphs/IL.html>

The personal lines classification addresses building code adoption and enforcement for 1- and 2-family dwellings. The commercial lines classification is for all other buildings.

¹ ISO is a source for information about risk. They supply data, analytics, and support for professionals.

The founders of the International Code Council (ICC) are the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International, Inc. (SBCCI). Since the early part of the 20th Century, these nonprofit organizations developed the three separate sets of model codes used throughout the United States. In 1994, as needs changed, the nation's three model code groups responded by creating the ICC and by developing codes without regional limitations.

The International Code Council develops the codes used to construct residential and commercial buildings, including homes and schools. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the International Code Council. Code enforcement officials, architects, engineers, designers and contractors can now work with a consistent set of requirements throughout the United States. This uniform adoption would lead to consistent code enforcement and higher quality construction.

The City of Princeton uses the following code:

1. 2003 International Building Codes

The Village of Seneca has adopted the following codes:

1. 2003 International Building Code
2. 2003 International Fire Code
3. 2003 International Fuel Gas Code
4. 2003 International Mechanical Code
5. 2003 International Residential Code
6. International Residential Code

Neighboring LaSalle County has adopted the following codes:

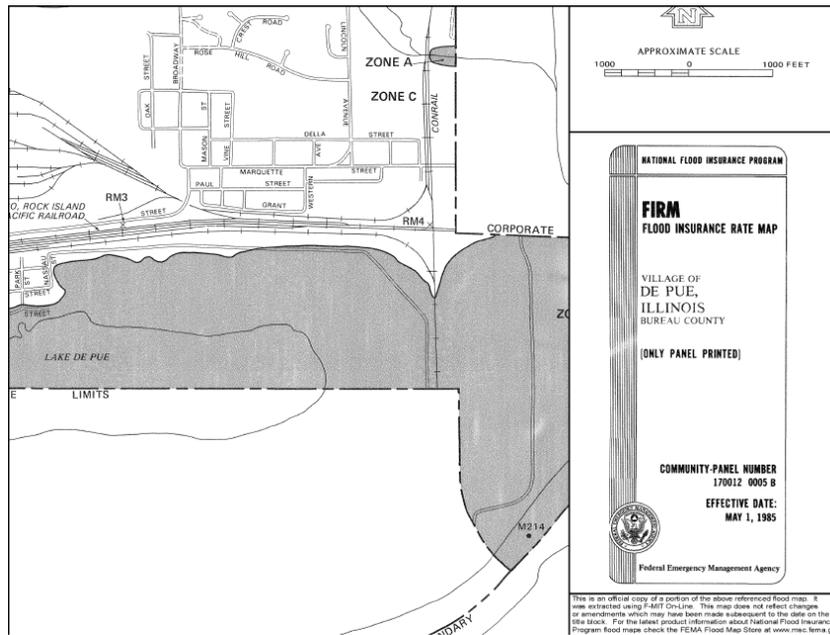
1. 2003 International Building Code
2. 2003 International Fire Code
3. 2003 International Fuel Gas Code
4. 2003 International Mechanical Code
5. 2003 International Residential Code

4.2 Floodplain Management

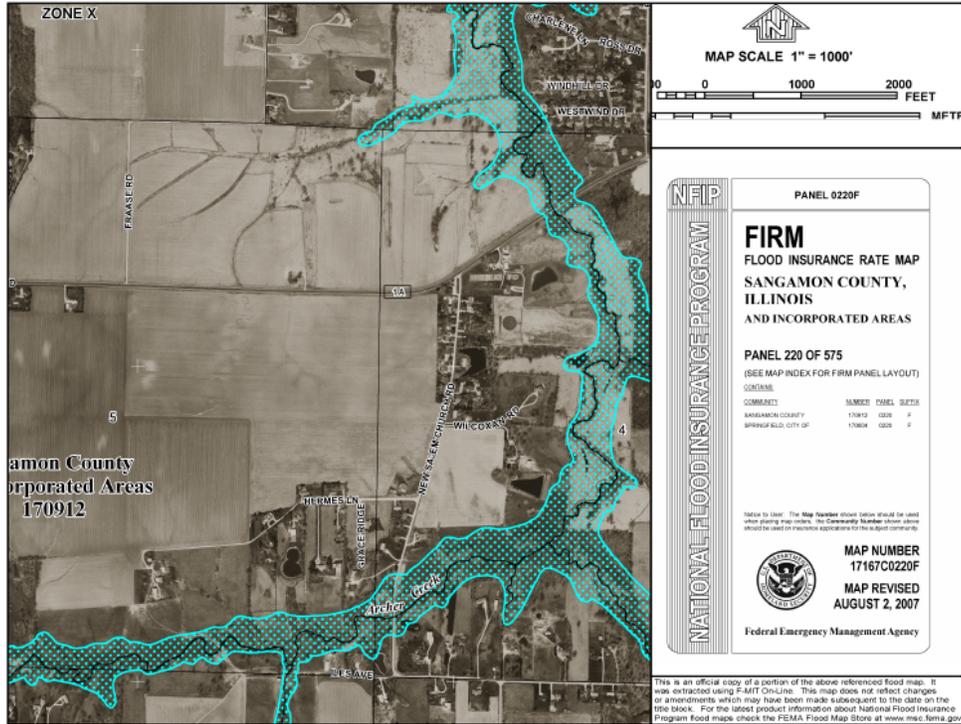
Those who live and build in the floodplain are exposing themselves to danger everyday. Floodplain management needs to include floodplain maps and development regulations. New development in floodplains is new risks to people and property. Any community that participates in the National Flood Insurance Program (NFIP) must maintain and enforce floodplain regulations.

Floodplain maps are created by FEMA. The map is called Flood Insurance Rate Map (FIRM). Each community is given a FIRM and a Flood Insurance Study that explains how the map was prepared. FEMA is trying to digitize all its maps at the present time. It is a time consuming process and land changes are difficult to keep current on a National basis.

The Firmette below is of the Village of DePue's flood zones. This is the older style FIRM (or *current* style until updating is complete for the area).



The map below is of Sangamon County. The newer FIRMs are being created using satellite imagery.



The following illustrations explain the FIRMs.

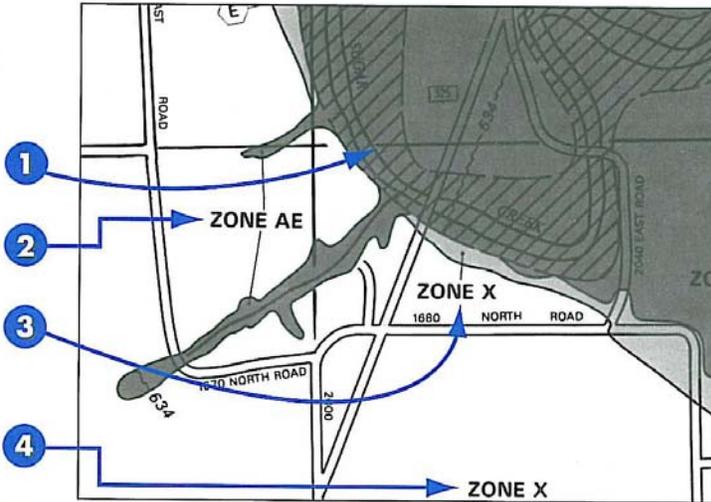
Newer FIRMs combine counties and incorporated municipalities, so matching across boundaries isn't a problem.

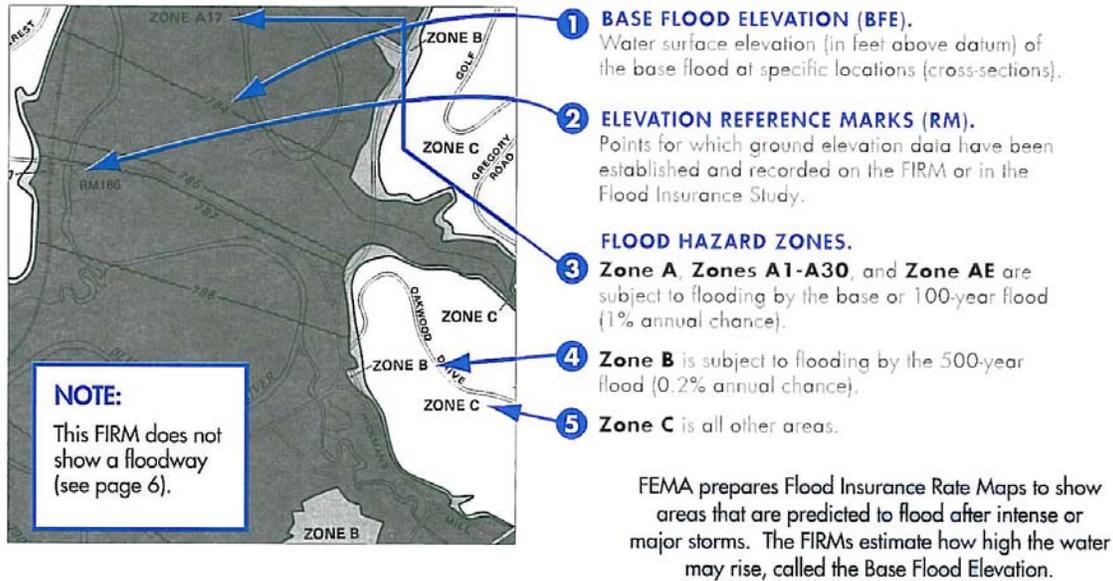
The **Floodway** is the "cross-hatched" area

ZONE AE is the 100-year (1%-annual-chance) floodplain

ZONE X (shaded) shows areas affected by the 500-year flood (formerly B Zone)

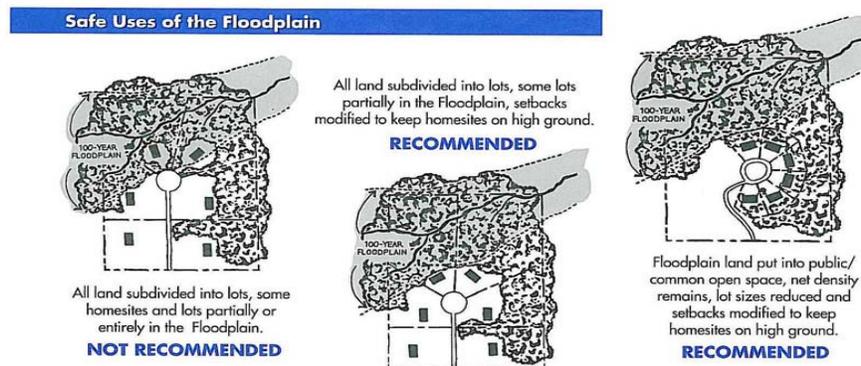
ZONE X (unshaded) is all other areas (formerly C Zone)





Illinois has minimum requirements for development in the floodplain. State permits are required for floodway development, so problems are not caused by fill. The Illinois Department of Natural Resources (IDNR) requires local governments to regulate the codes. FEMA maps the urban areas and only in rural areas where the stream drains 10 square miles or more. The urban fringes have moved into some of these areas with no regulation.

The Illinois Association for Floodplain and Stormwater Management administers the Certified Floodplain Manager Program. The local permit official must pass tests and receive continuing education. Communities with Certified Floodplain Managers, tend to have better floodplain management.



CRS credit may be achieved by:

1. Implementing digital or paper systems that improve access, quality, and/or ease of updating flood data within the community. The local regulatory staff, on a regular basis, must use each system, which should be updated annually.
2. Maintaining elevation reference marks.
3. Maintaining copies of all FIRMs.

Additional Flood data (AFD) credit may be obtained for portions of the floodplain that are mapped and managed to standards exceeding the minimum requirements of the NFIP. The following six elements make up the AFD for credit points:

1. Conduct new flood studies that produce base flood elevations or floodways.
2. If the study was funded by non-FEMA funds, points for the new studies are multiplied by a ratio to earn more credit.
3. If the new study was done to one or more higher standards than FEMA mapping criteria requires.
4. Are based on the allowable floodway surcharge used in the study.
5. If the community maps areas of special flood related hazards.
6. If the community, regional agency, or state has a signed, qualifying CTP agreement with FEMA.

The following four prerequisites must be done in order to receive credit for a new study:

1. Study must be based on a FEMA approved technique or approved by the FEMA regional office.
2. Community must use the new data in its floodplain development regulations.
3. If the study affects a length of shoreline or stream, it must be submitted to FEMA to revise the FIRM.
4. The community must verify that the regulatory floodplain maps and related data are current with the conditions, when verification cycle is determined.

Redevelopment has been occurring in the communities as well. FEMA has identified as a success example, the city of Ottawa, in neighboring LaSalle County. Over a few years, the owners of 33 properties with National Flood Insurance Program (NFIP) coverage each filed multiple claims. Their multiple claim distinction identified them as repetitive loss properties in this community of 18,000. Many of these properties were located in a floodplain known as the “Flats” and faced evacuation every few years. After severe floods in 1996, the area was included in a federal disaster declaration. With a high number of repetitive loss properties and substantial damage resulting from the 1996 flooding, the city estimated that its direct costs exceeded \$105,000 for a single flood and did not account for commercial and personal losses.

Due to the disaster declaration, Hazard Mitigation Grant Program (HMGP) acquisition funds would be available as a result. Ottawa city officials become part of an ongoing effort of FEMA and IEMA to acquire flood prone properties at pre-disaster, fair market value, from willing sellers. FEMA would pay up to 75 percent of the project cost. As the city had committed to providing 5 percent of the funding, the final 20 percent would need to be absorbed by qualifying property owners. As a result of the project, the city acquired parcels from 36 different property owners and demolished over 65 structures including single-family homes, duplexes, garages, and commercial buildings. The area is now established as Fox River Park and has open play areas and public space for picnicking and fishing, as well as boat docks and a river walk.

CRS credit points are given if a community adopts and implements a floodplain management plan (FMP). The FMP has to be developed using the steps within the four phases.

Phase I: Planning Process

Step 1. Organize to prepare the plan

Step 2. Involve the Public

Step 3. Coordinate

Phase II: Risk Assessment

Step 4. Assess the Hazard

Step 5. Assess the Problem

Phase III: Mitigation Strategy

Step 6. Set goals

Step 7. Review Possible Activities

Step 8. Draft an Action Plan

Phase IV: Plan Maintenance

Step 9. Adopt the Plan

Step 10. Implement, Evaluate, Revise

4.3 Manufactured Housing Regulations

A manufactured home is constructed according to a specific building code to ensure proper design and safety. They are constructed in accordance with the U.S. Department of Housing and Urban Development (HUD) Code. The United States Congress laid the foundation for the HUD Code in the National Manufactured Housing Construction and Safety Standards Act of 1974. The reasons for this act are as follows, according to the Manufactured Housing Institute:

1. The interstate shipment of homes from the plant to the retailer to the home site meant that the manufacture, ordinarily, did not know in advance which code would apply
2. States were not able to effectively and uniformly regulate manufactured home construction and safety issues

In its legislation, Congress directed the Secretary HUD to establish appropriate manufactured home construction and safety standards that “...meet the highest standards of protection, taking into account existing state and local laws relating to manufactured home safety and construction.”

Local governments cannot require additional standards on construction. They can, however, regulate location of the structures and their on-site installation. Installation regulations are the number one way to have mitigation against wind damage, which is a large concern for manufactured housing.

The Illinois Department of Public Health enforces the Mobile Home Park Act, the Illinois Manufactured Housing and Mobile Home Safety Act, and the Illinois Mobile Home Tiedown Act. These state codes were enacted for the protection of people and property, there are not, as of yet, any requirements for storm shelters in manufactured housing areas. The department regulates these codes unless the community is a home rule community.

Bureau County has 574 manufactured homes, Marshall County has 277, and Stark County has 138 manufactured homes. It is important to protect the residences of these homes as much as it is those of non manufactured housing. If you live in a mobile home, even with tie downs, seek more secure shelter. A prearranged location should be selected, whether it is a friend's house, a relative's house, or a nearby building with a basement or tornado shelter.

4.4 Open Space Preservation

Preventing new development in floodplain and other hazard prone areas is the best way to minimize future damage to life and property. Open space can have many uses; it can be used for agricultural purposes, parks and recreation, golf courses, or greenways. Plans and ordinances can be created and devised to protect lands for open space through many means such as acquisitions, easements, zones, setbacks, and frontage.

CRS credit points may be obtained for open space (OS) preservation through the following measures:

1. Keeping vacant floodplain lands open
2. When deeds for the parcels preserved as OS have restrictions that prevent future owners from developing
3. When parcels preserved as OS are
 - a. In an undeveloped natural state
 - b. Have been restored to a natural state, or
 - c. Protect natural/beneficial floodplain functions
4. If OS is also in an area subject to a special flood-related hazard

4.5 Planning, Zoning, and Land-use

Planning and zoning directs development. Zoning controls where development should or should not occur, such as floodplains and/or floodways. Development should coincide with proper land uses. Land uses should be compatible with the natural land conditions.

Comprehensive Plans:

These are the plans that communities, large and small, use to control future growth and development. Damage from hazards can be mitigated within these plans by controlling where development occurs but, unfortunately, hazards are usually not addressed within the comprehensive plans. NHMP, however, can be coincident with comprehensive plans to ensure interconnectedness.

Bureau County, Marshall County, and Stark County all need to update and adopt new comprehensive plans. It is a cost to update the plans but it is worth the cost so communities can have a plan to control development. Many communities use the plans to direct growth in ways that suit the community. Directing growth includes deciding where future industry, commercial, and residential plots should be. This facilitates the protection of rural areas and the higher density of urban areas.

Zoning Ordinances:

Zoning ordinances regulate development by dividing a community into different areas, such as residential, commercial, or industrial. Each area has regulations and standards for development. Zoning ordinances and codes allow for a community to control development and growth. The ordinances will specify such regulations as lot size, easements, and frontage. They should coincide with the future land use recommended in the future land use plan. Zoning is a primary tool in the implementation of those proposed land uses.

Zoning ordinances can be used to protect property from hazardous areas. Flexibility in ordinances to avoid such hazard areas is recommended. The Planned Unit Development (PUD) allows developers to incorporate hazard mitigation measures into development. Floodplain management and lot size adjustments can be site specific through design.

The City of Princeton, Illinois in Bureau County states the following in their Zoning Ordinance, Section 14-1-6, which is the purpose of the ordinance. It is as follows:

“The purpose of this chapter is to promote the public health, safety and general welfare of existing and future residents of the City of Princeton...”

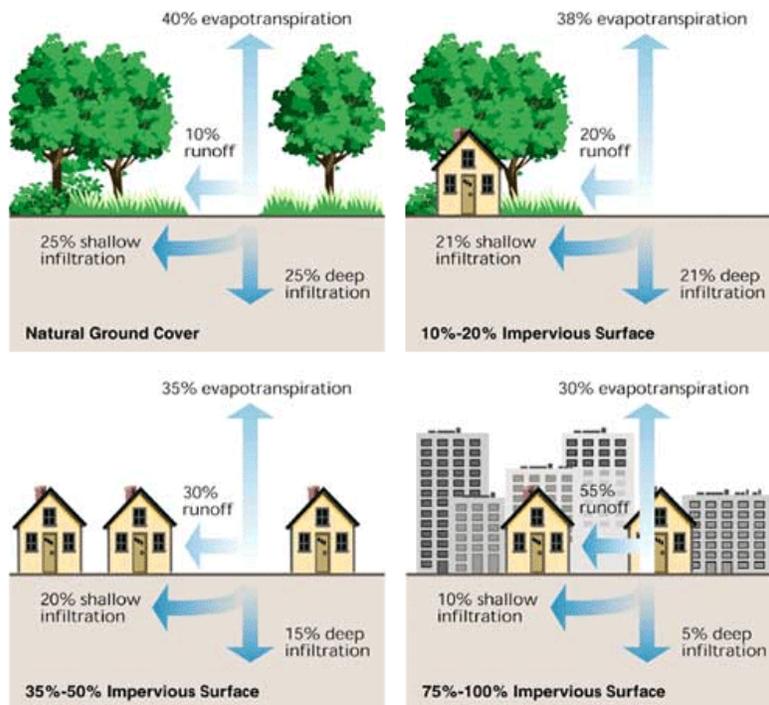
A community can control the development by not extending infrastructure to areas outside of the city or within certain zones. Designating areas for acquisition by the city to maintain them as open space, parks, and recreation areas will also prevent building in floodplains.

CRS credit points are available for Land Development Criteria (LDC) and Low-Density Zoning (LZ). LDC earns points for regulations that require or encourage appropriate uses in the floodplain and/or discourage construction of buildings in flood prone areas. Credit points can be given for LZ for those portions of the floodplain subject to zoning rules that require a minimum of 1 acre per building.

4.6 Stormwater Management

Stormwater is precipitation that accumulates during and immediately following a storm event. Stormwater management is functions associated with planning, designing, constructing, maintaining, financing, and regulating the constructed and natural facilities that collect, store, control, and/or convey stormwater.

Stormwater management is important because development outside a floodplain can contribute to flooding hazards. When urban development replaces natural ground cover stormwater runoff is increased. Streets and rooftops shed more water than natural ground cover. Drainage ditches and storm sewers make the travel of runoff quicker towards the streams. This can aggravate downstream flooding, overload the drainage system, and impair the water quality.



Federal Interagency Stream Restoration Working Group

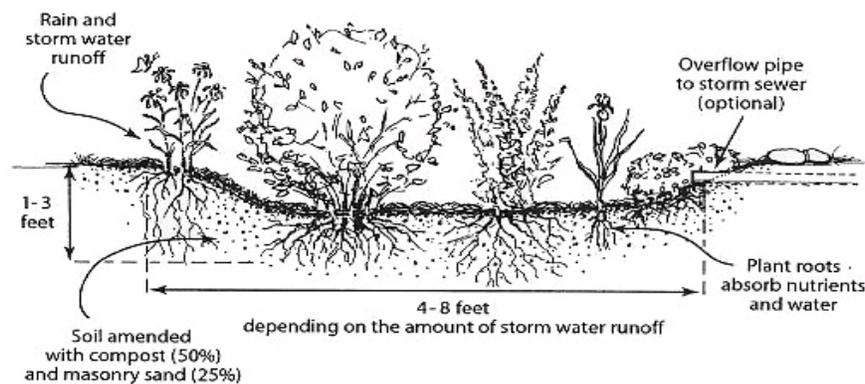
Retention and detention of stormwater is an important aspect of stormwater management. Stormwater management requirements are generally found in subdivision ordinances. The regulations make developers guarantee that the post-development runoff is not greater than the pre-development runoff.

Conducting community planning to determine an effective location for a basin and have developers contribute to it is a more suitable and economic idea than having many separate inefficient basins or retention ponds.

Water quality is also a stormwater management aspect. Improving the quality of the stormwater runoff that flows into the river is important. Non-point source pollutants are carried into the receiving streams. Non-point source pollutants include lawn fertilizers, sediment, oils from street surfaces, pesticides, and farm chemicals. Point source pollutants come from municipal and industrial wastewater surfaces. Point sources also include pipes or man-made ditches.

Stormwater management water quality measures are known as best management practices. The use of such measures as drainage ways, and retention and detention basins are incorporated into new developments to reduce non-point source pollutants from entering the water system. These measures hold stormwater runoff and clean it through filtration. Examples include green roofs and rain gardens.

The following is a portrayal of a rain garden and its inner workings.



Mecosta Conservative District

Sedimentation is a large source of water pollution. Farmland and construction sites are large contributors of sedimentation in stormwater runoff. Sedimentation tends to fill in channels and lakes where the water from streams slows down. Due to the build up of sediments, the drainage channels become less able to carry flood flows. Minimizing erosion and capturing sediment before it leaves the site helps maintain water quality. Sediment basins and wetlands are two means of capturing sediments.

According to the Illinois Department of Natural Resources (IDNR), wetlands associated with riverine systems have many important functions, which include:

1. Acting as a floodway, transporting pulses from upstream to downstream
2. Draining back into a stream when water levels are below normal maintaining the flow
3. Reducing flood velocity (vegetation slows water)
4. Reducing sedimentation
5. Having microorganisms entrap and break down chemicals while using excess nutrients to enhance growth

Percent change in flow rates of streams for every one percent of watershed present as wetland.

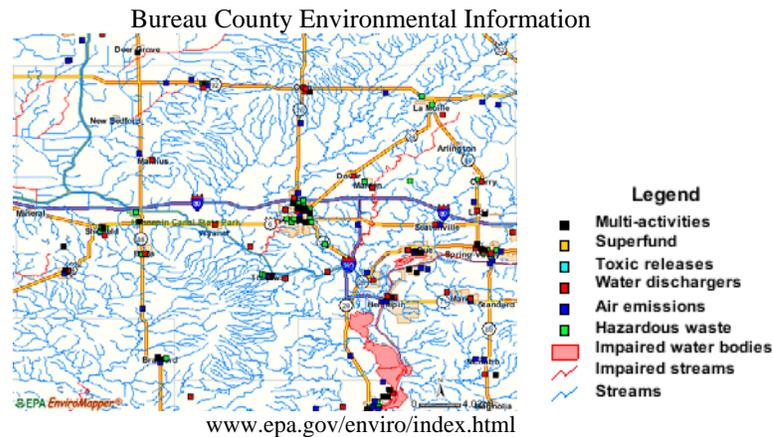
REGION	PEAKFLOW	FLOODFLOW	LOWFLOW
Statewide	3.7% decrease	1.4% decrease	7.9% increase
Northern	7.9% decrease	2.3% decrease	15.0% increase
Central	5.9% decrease	4.5% decrease	5.5% increase
Southern	0.8% decrease	No Change	15.9% increase

(Demissie and Kahn 1993)

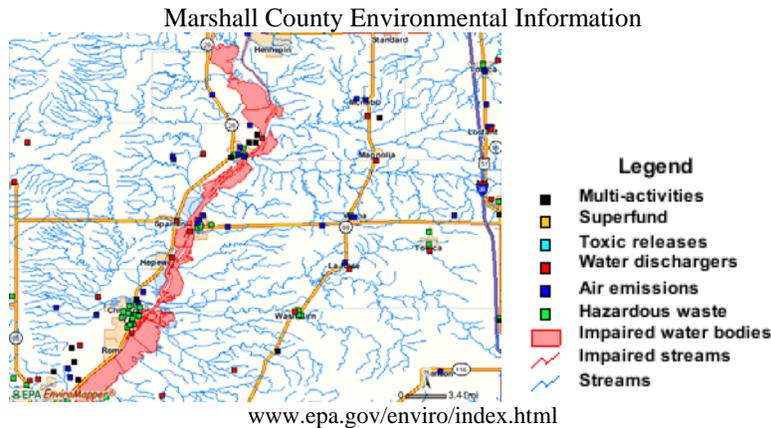
Putting a dollar value on wetlands is very difficult. They protect streams and people and property during floods and droughts saving many thousands of dollars. Wetlands and their uses is a multi-million dollar industry in Illinois and a large contributor to the economy.

The National Pollution Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters. The Illinois Environmental Protection Agency (IEPA) is responsible for administering the state's stormwater program. The state of Illinois's stormwater requirements are the same as the Federal NPDES requirements. The program requires all construction sites disturbing more than 1 acre, industrial sites, and all designated Municipal Separate Storm Sewer Systems to obtain permit coverage.

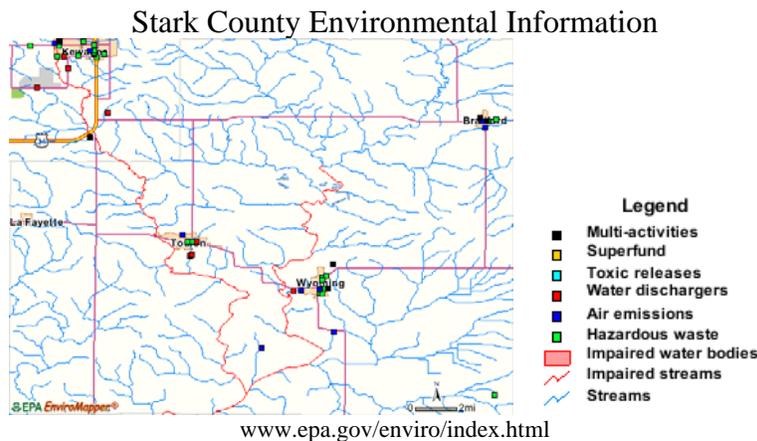
Bureau County:



Marshall County:



Stark County:



CRS credit points are given for Stormwater Management Regulations (SMR) and for Stormwater Management Master Plan (SMP). Points for SMR are provided for regulating developments on a case-by-case basis to ensure that the peak flow of stormwater runoff from each site will not exceed pre-development runoff levels. The three elements involved in SMR are:

1. Size of developments regulated
2. Design storms used in regulations
3. Public maintenance of required facilities

The SMP acquires points by regulating developments according to a stormwater management master plan.

CRS credit is also given for requiring all new buildings to be protected from local drainage problems, regulations minimizing erosion from land disturbed due to construction or farming, and regulations that improve the quality of stormwater runoff.

4.7 Subdivision Regulations

Subdivision regulations establish minimum standards for subdivision development. They govern the development of large vacant tracts of land that a developer plans to split into individual lots. Subdivision regulation set the standards for infrastructure, where the zoning ordinances allow for building.

Subdivision regulations can include the following hazard protection standards:

1. Requiring that the final plat show all hazardous areas
2. Setting minimum road widths and cul-de-sac radius for emergency vehicles
3. Require power and or phone lines to be buried
4. Establish minimum water pressure for fire fighting
5. Require road ways to be at a certain flood levels

CRS credit points are available for Land Development Criteria (LDC). LDC earns points for regulations that require or encourage appropriate uses in the floodplain and/or discourage construction of buildings in flood prone areas. To earn points for subdivisions the regulations must:

1. Set aside all flood prone lands as OS, drainage or flowage easements, back yards or development free and/or,
2. Require each new lot provide a building site that is on natural high ground, out of the regulatory flood plain. Cutting and filling does not get credit,
3. Provide incentives for developers to avoid developing the regulatory floodplain,
4. Require developers to submit more than one site plan and have an alternative to buildings in the floodplain,
5. Allow cluster development or other non-traditional patterns
6. Land-use plan that recommends OS or LZ.

Each of the above is worth a different amount of CRS credit points.

4.8 Conclusions

The seven preventive measures discussed in this chapter are designed to protect new and future construction and development from hazards and potential losses.

Building codes are an effective measure for protecting new buildings from the damages that hazards may cause. Incorporating hazard protection standards into local building codes is an ideal way to persuade developers and citizens into protecting themselves.

Floodplain regulations are designed to protect people and property. Floodplain regulations must be enforced if the community participates in the National Flood Insurance Program (NFIP). Within this chapter floodplain maps and explanations are included because it is important to know how to read a FIRM and to know what properties are within the floodplain.

All three counties have citizens that live in manufactured homes. The Federal Government sets the standards for these homes. Local governments cannot require additional standards but can regulate where manufactured homes are located. Regulating location is a measure to protect the population from potential hazards.

Open space preservation is a preventive measure for protecting floodplains. Designating floodplains as open space is an excellent way to protect lives and property. Lands can be designated as open space in plans and ordinances.

Creating and updating comprehensive plans to include and incorporate this NHMP is a feasible way to direct development into areas that are not prone to natural hazards. Zoning ordinances can also be used to protect property from hazardous areas. They can also be used to designate floodplain areas for acquisition to become open space or parks.

Stormwater management is imperative because development outside the floodplain can increase flooding hazards. Urban development replaces natural groundcover and runoff from roofs and streets create more water. Water quantity and quality can be determined in stormwater management.

Subdivision regulations establish standards for development. They are useful in controlling safety standards and for including preventive measures and property protection measures.

4.9 Recommendations

- ⚡ Adopt current building codes.
- ⚡ Adopt a Floodplain Management Plan.
- ⚡ Don't allow building in floodplain.
- ⚡ Regulate location and installation of manufactured housing.
- ⚡ Use plans, zoning ordinances, and land-use measures to preserve existing open space and designate new open space.
- ⚡ Create Stormwater Management Master Plan to address and existing and future stormwater issues.
- ⚡ Use subdivision regulations to establish minimum standards for subdivision development.

4.10 References:

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Chapter 5: Property Protection

Property protection measures are used to protect property that is in danger from damage. The property owner, generally, implements the protective measures at their own cost, but assistance from the government may be obtained depending on the circumstances.

5.1 The Government's Role

Property protection measures are, generally, the responsibility of the home or building owners. The government, however, should be involved to reduce damage that can occur from hazards. Educating the public and supporting implementation of property protection measures is an important role of the government.

Local governments need to modify their critical facilities and facilities to ensure continued usage during and after a hazard. Having these buildings properly insured is a reasonable protection measure. Knowing what damages are covered is imperative so that after a hazard, it is not discovered that damage incurred is not covered.

5.2 Insurance

The NFIP is a federal program enabling property owners in participating communities to purchase insurance as protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Flood insurance is recommended even if floodproofing has been done. Homeowners insurance policies, generally, does not cover floods. There is a 30-day waiting period before National Flood Insurance Program (NFIP) coverage takes effect. Most communities in Illinois with flood problems participate in the NFIP. Local agents can sell a policy and the Federal Government sets the rates. Any house can be covered by NFIP policies. Separate coverage can be obtained for the structure and for the contents. There is no coverage for things outside the house like landscaping. Renters may buy content insurance even if there is no structural coverage from the owner.

In Illinois more damage occurs to contents than structures but both insurance types are recommended because you never know what flood damage might occur. Flood insurance, generally, only covers damage incurred. There may be additional costs to bring a damaged building up to the current code. Flood insurance does not cover contents in a basement. Each company has different amounts of coverage, deductibles, and arrangements.

Crops, being out in the open, are susceptible to damage from natural hazards. Crop insurance is available as a risk management option. There are many different types of crop insurance that can be purchased. Crop insurance agents and agri-business specialists can assist with choosing plans and policies. The United States Department of

Agriculture (USDA) Risk Management Agency (RMA) provides policies for over 100 crops. The USDA's Farm Service Agency manages the Non-insured Crop Disaster Assistance Program (NAP) for producers of noninsurable crops when there is a low yield, loss of inventory, or prevented planting. Multi-peril crop insurance (MPCI) policies are available for most insured crops. MPCI provides protection against weather related causes of loss and certain other unavoidable perils.

Local governments can self-insure but covering damages that occur to more than one building may put a heavy burden on the treasury. Federal disaster insurance will not cover the difference.

5.3 Barriers

A barrier is designed and used to keep surface floodwaters from reaching a building. A flood protection barrier can be built of dirt, soil, concrete or steel. Dirt and soil barriers are called berms, while concrete and steel barriers are called floodwalls. Site design is imperative so flooding does not occur on properties that were previously flood free. The barriers need to take into consideration still waters. If waters sit, leaks are a possibility. Proper drains and sumps as well as pipes will need to be installed.

Berms are susceptible to erosion and can settle to lower than the original height. Berms need to be maintained to be of proper protection. Berms require a lot of room to be worthwhile. The standard build is three horizontal feet for each vertical foot (3:1 slope).

A professional engineer should be consulted for this technique. Barriers should be as far from the building as possible to reduce seepage and hydrostatic pressure. All barriers are susceptible to cracks and weakening from moving waters. Insurance is still a must because failure is always a possibility.

Basement protection berms are another barrier option. Construction of low walls around stairwells or the use of backfill can protect basements and the lower floors of split-level homes. The steps are as follows:

1. A waterproofing seal is applied to the walls
2. Walls are built up around the window wells and basement stairwells
3. A berm is built around the side of the house
4. Drains are installed to slow seepage

This property protection measure is to keep the hazard from reaching the property.

CRS credits barriers, as they are part of the Flood Control Technique Used (TU) Activity. The following prerequisites are required for credit:

1. Permits must state that the project complies with Federal, State, and local codes and regulations.
2. Project must protect the building from at least the 25-year flood
3. If the project requires human intervention, at least one hour of flood warning time plus the time for installation must be given
4. Project must have been completed after the effective date of the initial FIRM
5. Barrier must be entirely located on the property of the owner of the protected building

For more credit, barrier must be designed, and the construction approved by a licensed engineer and the design accounts for interior drainage, seepage, and under-drainage.

5.4 Relocation

If in a flood zone, the best way to protect your home is to remove it from the threat. Any structure can be moved, but the heavier the structure, the heftier the cost. The easiest structures to move are small houses on crawlspaces. Buildings on slab, buildings with fireplaces, and buildings with masonry walls are very costly to move. Relocation within a large lot is a good option if the property owner has buildable land outside of the floodplain. Some structures, however, are not worth the expense to move compared to the worth. Dilapidated structures are cheaper and easier to demolish.

Communities can acquire (by cost) properties that cannot be relocated. Some Federal and State programs are available to assist communities in certain situations. Acquisition and demolition, are generally, undertaken by a government agency, and the land converted to a park or open space. Private developers also acquire land for waterfront golf courses. If people do not want to move, a community can end up with private properties staggered within newly acquired property.

This property protection measure is to keep the hazard from reaching the property.

CRS credit points are given based on the number of buildings acquired, relocated, or otherwise cleared from the regulatory floodplain since the effective date of the FIRM. The buildings must be an insurable building, must not be replaced with another building, and been located in the regulatory floodplain as shown on the Impact Adjustment Map. The site must remain preserved as OS, and the lot must be plotted in the map.

5.5 Retrofitting (Modifying)

This property protection measure is the modifying of the property to minimize and prevent damage to a structure against floods, winds, and earthquakes. It is necessary, especially on older structures, which were built before current knowledge of hazards mitigation. Some retrofitting measures are more reliable than others, but there are many options.

5.5.1 Elevation

Elevating a building is raising the structure above the flood level. The area below the raised building can be either filled in or left with openings so the floodwater can flow freely underneath the structure. The type of elevation structure depends on the condition of the building, the floodplain regulations, and the owner's finances. New structures in floodplains require, by law, to be elevated. An already existing structure can be raised while a new foundation is constructed under the house. Many homeowners are concerned with the appearance change that elevation will cause to their house. The new foundation can be covered by landscaping or backfill.



When flood elevations are not excessive, a crawl space can be constructed. A crawl space must not be below grade and must have permanent openings. The openings can be covered by plastic to keep insects and animals out but must be able to open without human intervention if floodwater reaches the building.

Using fill as an elevation method is another proper means. If fill is used, it does not mean the house is out of a floodplain, basements are still not allowed. Stilts, poles, and piles are used when there are high flood levels and a house must be raised feet to be above the flood protection elevation.

Any method of elevation must allow floodwaters to enter and exit without damaging the buildings structure.

CRS credit points are given for elevating buildings. Points are based on the effectiveness of the project.

5.5.2 Floodproofing

Floodproofing is a combination of structural and non-structural additions, changes, and adjustments to structures, which reduce or eliminate risk of flood damage to real estate or improved real property.

Dry floodproofing is techniques for sealing a building so floodwaters do not enter as well as making them structurally resistant to flood water pressure. All areas that are below the flood protection level are to be made watertight. Buildings with basements are not appropriate for dry floodproofing. Within the floodplain, dry floodproofing on non-residential buildings is permitted, but dry floodproofing on residential buildings is only permitted as long as the building is not substantially damaged or improved. This is a very difficult and expensive floodproofing measure.

The CRS credits for dry floodproofing are based on the effectiveness of the project. The following are the prerequisites to assure the TU's are properly designed and maintained.

1. Permits must state that the project compiles with Federal, State, and local codes and regulations.
2. Project must protect the building from at least the 25-year flood
3. If the project requires human intervention, at least one hour of flood warning time plus the time for installation must be given
4. Project must have been completed after the effective date of the initial FIRM

The following three items will earn some percentage of points based on effectiveness.

1. Project designed by licensed engineer or architect and the design accounts for internal drainage, seepage, and under-drainage
2. Project does not depend on human intervention, protects to a level less than three feet over the 1st floor, the design accounts for internal drainage, seepage, and under-drainage, and the building does not have a basement
3. Some points may be received for all other cases not included the above two elements

Wet floodproofing is permanently removing or elevating everything that could be damaged by a flood. If the flood elevation levels are not high, furnaces and laundry appliances can be raised on blocks or platforms. Waters are then let inside so that pressure is relieved from the foundation walls. Even a little bit of wet floodproofing can save money from damages that could occur.

The CRS credits for wet floodproofing are based on the effectiveness of the project. The four TU prerequisites listed above are the same for wet floodproofing. The following three items will earn some percentage of points.

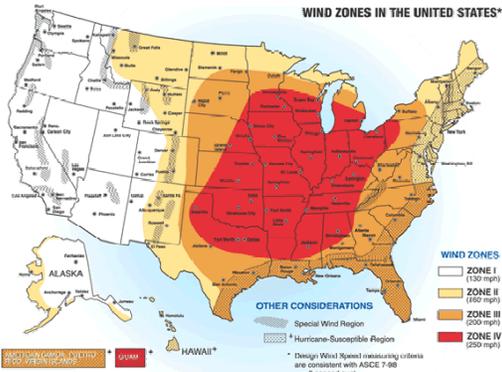
1. Project designed by a licensed engineer or architect
2. Project not designed by a licensed engineer or architect
3. The furnace, water heater, electrical breaker box, and other utilities are relocated above flood level.

5.5.3 Earthquake Modifications

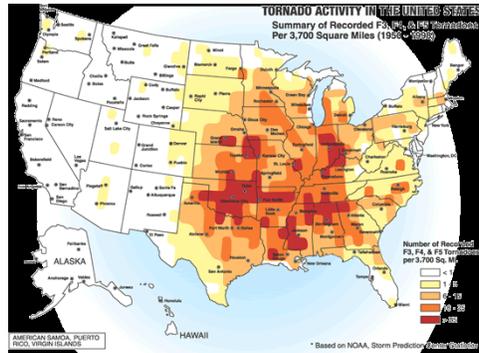
The relatively low chance of strong earthquakes in the Bureau County, Marshall County, and Stark County area means less expensive earthquake measures can be taken to keep property safe. Tying down appliances, water heaters, and furnaces, as well as installing flexible utilities can be an inexpensive way to proof the home or business. Critical facilities may have to take extra measures for protection so functionality is not an issue during and after any disaster.

5.5.4 Tornado Shelters

To protect from tornados and high winds the construction of underground shelters or safe rooms are recommended. Interior rooms can be reinforced and modified to be safe rooms. Securing walls, roofs, and foundations is also a means for protecting against wind damages. Large openings should be secured and sealed as well. The decision to build a shelter or safe room is a personal decision. Depending on where you live and the likely hood of a tornado should be taken into consideration. FEMA has an excellent guidebook to help with the decision. In general the pictures and chart below can help determine the likelihood for a tornado. In North Central Illinois there is a high risk.



http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm



http://www.fema.gov/plan/prevent/saferoom/tsfs02_torn_activity.shtm

		WIND ZONE (See Figure 1.2)			
		I	II	III	IV
NUMBER OF TORNADOES PER 1,000 SQUARE MILES (See Figure 1.1)	<1	LOW RISK	LOW RISK ★	LOW RISK ★	MODERATE RISK
	1 - 5	LOW RISK	MODERATE RISK ★	HIGH RISK	HIGH RISK
	6 - 10	LOW RISK	MODERATE RISK ★	HIGH RISK	HIGH RISK
	11 - 15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK
	>15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK

LOW RISK	MODERATE RISK	HIGH RISK
Need for high-wind shelter is a matter of homeowner preference	Shelter should be considered for protection from high winds	Shelter is preferred method of protection from high winds

★ Shelter is preferred method of protection from high winds if house is in hurricane-susceptible region

5.5.5 Winter Storm Modifications

Winter storm protection measures should be highly considered in the Illinois Valley area where winter storms are prominent. Insulating buildings and locating water lines to interior spaces is recommended. Sealing windows with plastic or storm windows and modifying roofs to shed heavy snow loads is suggested. Warm clothes, alternative heat sources, food, water and batteries should be kept in an emergency kit.

5.5.6 Thunderstorm Modifications

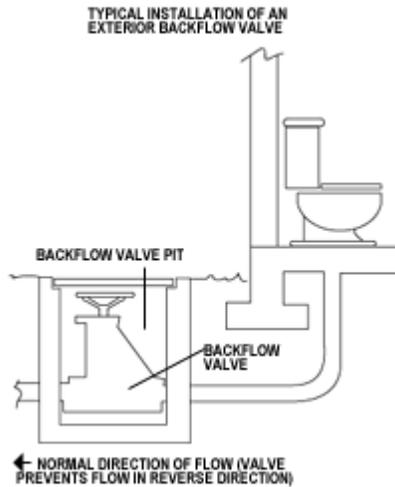
There are many ways to protect against the damages that could occur from thunderstorms. Having lightning rods, storm shutters, and roof materials that are more resistant to hail damage are outside modifications that can protect the building from damage. Burying utility lines can also be a significant modification for protection. Inside modifications include using surge suppressors to protect electronics and appliances. Generators and backup power batteries to provide needed power are also suggested.

The City of Princeton Police Department is planning on retrofitting their building, a critical facility, by using shatterproof glass, roof tie-downs, as well as obtaining a back-up generator.

5.6 Sewer Backup Protection

Many measures can be taken to prevent damage from floods. Some measures can be achieved through changes done by the homeowner and some should be accomplished through the hiring of a professional. Flooding can cause sewage from sanitary sewer lines to back up into houses through drainpipes. The damage from this is difficult to repair as well as a major health concern to the building occupants.

Backflow valves are a good way to protect from this hazard. They are designed to block drain pipes temporarily and prevent flow into the house. Backflow valves can have simple to complex designs and should be installed by a professional plumber.



www.fema.gov

Overhead sewers can also be installed to avoid sewage overflow. These are expensive and require maintenance. A sump is installed under the basement floor to intercept sewage flowing from the basement fixtures and the basement floor drain.

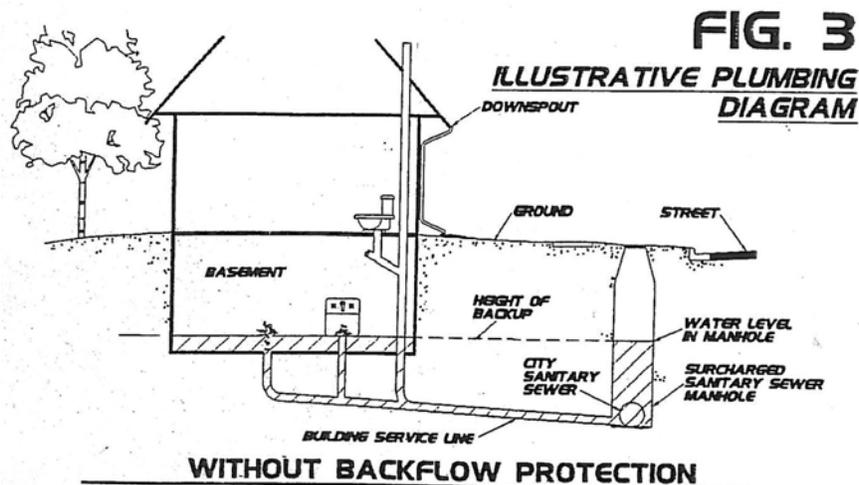
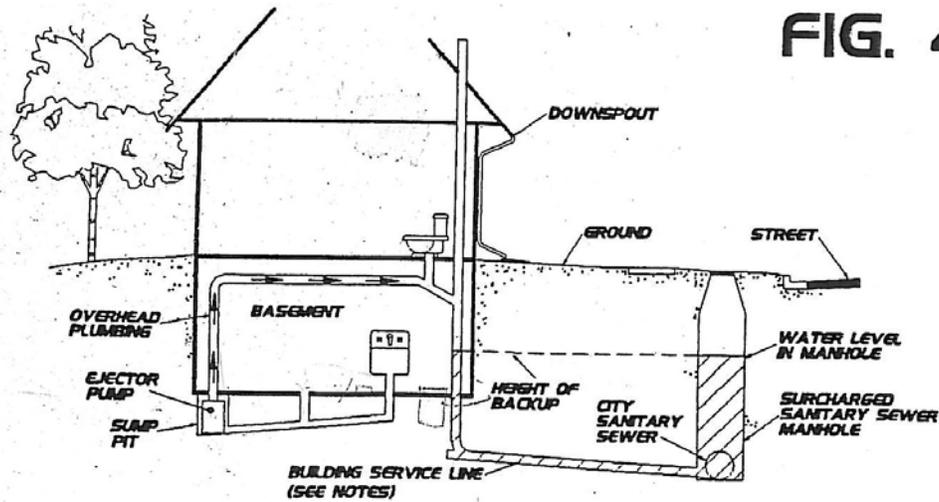


FIG. 4



WITH OVERHEAD SEWER

NOTES:

- 1. This is the preferred method and will eliminate all backups.*
- 2. Ejector pumps can be installed either inside or outside of building and can be used to pump either a portion or all the sewage from a building.*

Another way to stop sewer backup is to plug the hole where it comes into the house. This can be done with a floor drain plug. Floor drain plugs can be picked up for minimal cost at a hardware store. A floor drain plug with a float will allow water to leave, but will halt liquids from entering as the water rises, the float plugs the drain. Floor drain stand-pipes have the same basic effect, keeping water in the pipe. They are also inexpensive. Pressure can eject the plugs and pipes may also burst due to the backup pressures. These two measures are used to keep water from coming up the lowest opening in the building.

5.7 Urban Forestry

Trees cause a lot of damage during a severe storm because much damage is done to trees by the wind, the snow, and ice. Trees fall on houses, utility lines, cars, across roads, and on anything else below them as they fall.

Urban forestry programs can prevent some damage because hardier trees that can withstand wind and ice can be planted. Trees that do not grow fast and do not grow to great heights should be used under and along utility areas. After storms trees need to be checked, pruned, and maintained so they do not heal and grow to be dangerous during a storm. A trained urban forester or arborist should inspect all damaged trees to determine if they should be saved or removed.

Hardier trees and programs that maintain and save trees will help communities prevent serious damage to property as well as the tree population from severe storms. An urban forestry plan should be included in properly written and enforced. It should reduce liability, alleviate extent of fallen limbs by wind and ice, and provide guidance on pruning and caring for trees. Such a plan guides a community to become a Tree City USA.

The four standards a community must comply with to be a Tree City USA is as follows:



1. Have a Tree Board or Forestry Department – If a city cannot budget a Department then a board of volunteers can be created.
2. Have a local tree ordinance – An annual work and action plan that provides clear guidance for planting, maintaining and removing trees from public places
3. Must spend \$2 per capita – This amount or greater is most likely being spent by work crews
4. Must promote Arbor Day – Proclaim this day and plant trees in the community.

Implementation of this program is limited in Bureau County and Marshall County, there are, however, communities that do participate. Henry in Marshall County has been a member for 10 years, as well as the City of Princeton, in Bureau County, which has been a member for 18 years. The North Central Illinois area has two other communities that are part of Tree City USA. The City of Ottawa in LaSalle County has been a Tree City USA member for 8 years. The City of Hennepin in Putnam County has been a member for 8 years. The variation in community size is an excellent example that any community can be a part of Tree City USA. Stark County does not have any Tree City USA participants at this time.

5.8 Repetitive Loss Properties (RLP)

CRS credit points may be obtained by conducting Repetitive Loss Area Analysis. The following criteria needs to be used to prepare an area analysis:

1. Map RLPs
2. Collect data on each building in the area using the “limited data view” of the National Flood Mitigation Data Collection Tool. If requested, the data must be available to FEMA and the State.
3. Follow the following five step process (in any order):
 - a. Advise all property owners in the RLP area that an analysis is being conducted.
 - b. Collect data on each property and determine the cause of repetitive loss.
 - c. Review alternative approaches and determine whether any property protection or preventive measures are feasible.
 - d. Contact agencies and organizations that may have plans that could affect the impact of flooding.
 - e. Document the findings, including a map.
4. Head of appropriate community department must approve all area analysis documents.
5. Community must prepare an annual progress report regarding implementation.

5.9 Conclusions

Property protection measures are recommended to protect the property that is in danger from damages.

The government, to set an example, should consider modifying and insuring any and all critical facilities. Protecting critical facilities is necessary to maintain order and ensure help is available during and after a disaster.

Flood insurance is recommended. Most homeowner's insurance policies do not cover floods. People may buy content and/or structure coverage. Crop insurance is also available and recommended because of the susceptibility of crops to damages from hazards.

Barriers, relocation, retrofitting (elevation, floodproofing, earthquake modifications, tornado shelters, winter storm modifications, thunderstorm modifications), sewer backup protection, and urban forestry programs are all recommended property protection measures. These measures should be researched and budgets should be analyzed to determine the most suitable measure.

5.10 Recommendations

- ⚡ Local governments should prioritize mitigation projects to best use available federal funding.
- ⚡ Encourage community members at risk from floods to participate in the NFIP.
- ⚡ Evaluate critical facilities to deem which property protection measures are most feasible.
- ⚡ Inform community members of the different measures to protect their property and financial situation.
- ⚡ Prioritize Repetitive Loss Properties within each jurisdiction.

5.11 References

Community Rating System Resource Center. Emergency Management Institute.
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“Crop Policies.” USDA Risk Management Agency. 31oct2007.
www.rma.usda.gov/policies.

“Floodplain Management.” Local Floodplain Administrator’s Manual. Illinois Department of Natural Resources. 1996.

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“Protect Your Property.” Basement Flooding: Sewer backup – A Guide to Floodproofing Your Basement. www.woodriver.org. 2007.

www.arborday.org

www.fema.gov

Chapter 6: Emergency Management

Emergency management is defined as “a process to reduce loss of life and property and to protect assets from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery.”

Emergency management measures should protect people during and after any and all hazards that arise. Emergency management programs should involve departments at the municipal and county levels. The Illinois Emergency Management Agency (IEMA) coordinates programs at the state level.

Bureau County has an Emergency Services Disaster Agency. According to state law, every county must have an Emergency Operations Plan. Bureau County, Marshall County, and Stark County have plans in place.

The following sections of this chapter are the measures that need to be taken to prepare and be ready before, during, and after an emergency.

6.1 Mitigation

Mitigation is the effort to reduce the loss of life and property by lessening the impact of disasters. This is achieved through risk analysis, which results in information that provides a foundation for mitigation activities that reduce risk, and flood insurance that protects financial investment.

Recognizing threats that can occur and the conditions that cause these threats is imperative to being able to warn the local population. The hazards are discussed in chapter 2 of this NHMP. A threat recognition system can prepare officials to warn the public in a timely manner.

Thunderstorms and Tornadoes

The National Weather Service (NWS) is the main agency that detects and predicts thunderstorms and tornadoes.

Floods

Recognizing the threat of floods is done by measuring rainfall, soil moisture, and stream flows upstream of the community. A flood recognition system predicts the time and height of the flood crest.

On large rivers, measuring and calculating the threat of floods is done by the National Weather Service (NWS). The NWS is in the Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA). The NOAA Weather Radio, which is an official source for weather information, delivers the natural hazard threat predictions.

On smaller streams, local communities need river and rainfall gages to establish their own flood recognition system. Flash flood watches come from the NWS, however, flash floods come very quickly and warnings may not be issued in time or at all.

Drought/ Extreme Heat

The National Weather Service is the main agency that predicts and warns for drought and extreme heat events. High temperatures and lack of precipitation can, generally, be predicted days in advance and give people enough forewarning to prepare. The website www.drought.gov can be accessed to monitor current drought conditions, forecasts, and to learn how drought is affecting the community. It was officially launched on November 1, 2007.

Earthquakes

There is no warning system for earthquakes but that does not mean one can not earthquake proof their home or business.

Winter Storms/ Extreme Cold

The National Weather Service is the main agency that predicts and warns for winter storms. Winter storm predictions can be forecasted in advance and warnings can, generally, be delivered in a timely fashion giving people time to prepare. The NWS can warn for all the different types of winter storms.

Ice Jams

Ice jams happen at different locations and for different reasons. The NWS can issue advisories but cannot predict how high the ice will raise portions of the river or stream. Where an ice jam will occur is also unpredictable so preventive measures should be taken where and when possible.

6.2 Preparedness (Warning)

After the threat is determined, it is time to warn the public and staff of other agencies and critical facilities. If a warning is given within sufficient time, measures to prepare can be taken. The more time that is given, which is not always possible, the more can be done to prepare.

Being prepared can help reduce fear, anxiety, and losses of life and property that accompany disasters. People should be aware of what to do before, during, and after different hazards. Different hazards will have different affects, and preparations can be done to avoid those affects and sometimes avoid the dangers completely.

Preparation is necessary because disasters do affect hundreds of thousands of lives every year. No matter how well a community is prepared, they will try to assist however feasible, they may not be able to reach someone in need. An individual should be prepared to take care of themselves for at least three days. FEMA's *Are You Ready?* Guide was designed to help prepare, respond, and recover for disasters.

The National Weather Service issues notices to the public using two levels of notification. The following two terms should be known and understood.

Watch: *A natural hazard is possible. The conditions for a winter storm, a flood, a thunderstorm, and/or a tornado are ideal. Tune into weather radio for information.*

Warning: *A natural hazard has started or been observed. A natural hazard is occurring. If advised to take shelter or find higher ground, do so.*

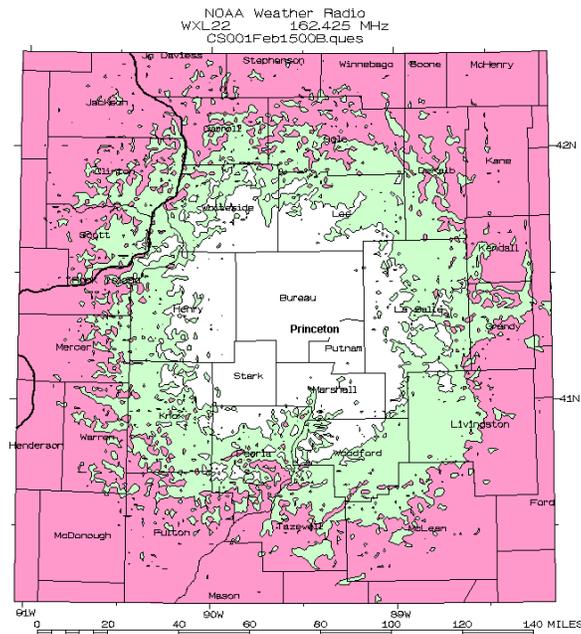
The Federal Communication Commission's (FCC) Emergency Alert System (EAS) was designed to alert specific areas about important emergency information. EAS accounts for special needs population, such as the hearing impaired. EAS sends out information to satellites, cable television, Direct Broadcast Satellite, High Definition Television, pagers, and Video Dial Tone.

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations that continuously broadcasts weather information directly from the nearest National Weather Service office. NWR broadcasts forecasts, watches, warnings, and other hazard information around the clock every day of the week. There are three NWS offices and forecast offices around the Bureau, Marshall, and Stark County area. The offices are in Chicago, IL, Quad Cities, IA/IL, and Central Illinois.

NWR works with the Federal Communication Commission's (FCC) Emergency Alert System, to provide weather and emergency information. In conjunction with Federal, State, and local emergency managers, as well as public officials, NWR broadcasts post-event information for all hazards including environmental (chemical spills) and public safety (telephone outages). NWR is provided as a public service, which includes over 940 transmitters. NWR requires a special radio receiver. The broadcasts can be found in the VHF public service band at the following frequencies:

162.400, 162.425, 162.450, 162.475, 162.500, 162.525, 162.550

The following is an image of the coverage area from the NWR service out of site name Princeton in Tiskilwa, Bureau County, IL. The frequency is 162.425.



The coverage maps are shown in a three-color format, which relates to three estimated signal levels. The white color is the reliable coverage area. The green color means picking up a signal is possible but unreliable. The red color area is unlikely to receive a signal.

Other warning measures communities may use are:

1. Sirens
2. Media (television, radio, and email)
3. Phone trees
4. Person to person warning

StormReady is a program the NWS established in 1999. StormReady helps community leaders and emergency managers strengthen local safety programs. It was designed to help local communities be more prepared with communication and safety skills before and during a natural hazard event. LaSalle, Ottawa, and Marseilles are three nearby cities in Illinois that are StormReady communities.

The guidelines to become StormReady are located on-line at www.stormready.noaa.gov. To be a StormReady community, officially, a community must:

1. Establish a 24-hour warning point and emergency operations center
2. Have more than one way to receive severe weather warnings and forecasts and to alert the public
3. Create a system that monitors weather conditions locally
4. Promote the importance of public readiness through community seminars
5. Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

Bureau County has elements 2 through 5 covered but there is no 24-hour warning point and emergency operations center. Many of the employees have more than one position and establishing a 24-hour warning point and operations center is a costly project that requires man-hours and county dollars to maintain.

6.3 Response

As warnings are being issued, a community should respond with action. Actions should prevent or reduce damage and injury. An emergency action plan covers the basic steps and assures that all the bases are covered. Emergency action plans are developed along with other agencies, so groups are not assigned an unknown responsibility. Many different measures are taken by many different organizations in preparation for a disaster and to recover from a disaster.

The following are a brief summary of the FEMA *Emergency Response Action Steps*:

1. *Disaster Alert* – Provide assistance to those in need. People come first.
2. *Safety First* – Remain calm, alert staff to potential dangers
3. *Getting started off-site* – Create team big enough for the work, assign tasks, notify emergency personnel,
4. *Documentation* – Make visual, written, and voice records.
5. *Damage Assessment* – Notify insurance representative or risk manager, look for threats to safety
6. *Salvage Priorities* – Determine order of salvage priority by group not item.
7. *Historic Buildings* – Contact historic preservation agencies, FEMA, and engineers before cleanup. Follow Secretary of Interiors Standards for Treatment of Historic Properties.

Emergency response plans should include steps and actions to be taken. Emergency response plans should be updated annually to ensure contacts are current and needed supplies are still available. The plans should be critiqued and revised so they can be used properly and more efficiently, as well as effectively.

6.4 Recovery

Critical facilities protection is imperative before, during, and after the storm. If critical facilities are damaged then there is a chance emergency managers will be drawn away from other issues to facilitate repairs to the critical facilities. It is the responsibility of the owner or operator of the critical facility, to make sure critical facilities are protected, so it can be used in support of the community's emergency response efforts. In case a critical facility is damaged during a natural hazard there should be an emergency plan in place so recovery efforts are quick and worthwhile. Hospitals, nursing homes, and public health facilities are required, by the State of Illinois, to have emergency response plans and to exercise the plans. Hospitals conduct tornado drills at least once a year.

After a hazard event, communities need to perform the tasks and activities to protect public health and safety and assist with recovery. Communities should help prepare people for the next hazard event. Remember no one is safe from natural disasters, they can happen anywhere at anytime. Preventive maintenance and preparation are excellent steps to take towards safety and protection against natural hazard events.

Safety, as well as mental and physical well-being, are primary issues in the recovery process. Knowing before a disaster, where assistance can be obtained when disaster strikes, can speed the process up and prepare people to help themselves and others.

Steps in the recovery process include:

1. *Aid the injured* - check for injuries, remember not to move seriously injured people unless they are in danger of death or further injury.
2. *Think of your health* – be aware of exhaustion and stress from the situation, be sure to eat food and drink plenty of water.
3. *Be aware of safety issues* – watch for broken glass, gas leaks, contaminated buildings, and damaged electrics.
4. *Check for damage* – check for structural damage to home (if there are concerns wait for a building inspector to check the home before entering), watch for poisonous and dangerous animals while moving debris.
5. *Keep records* – Take pictures if possible for your records and insurance

Some organizations that can help are:

1. American Red Cross
2. Salvation Army
3. Local volunteer organizations and relief groups
4. Crisis counselors (for some major disasters FEMA, State, and/or local governments may provide counselors)

6.5 Conclusions

Emergency management consists of mitigation, preparedness, response, and recovery.

Communities should have warning services or know where warnings for disasters will come from. Warning devices should be mapped as well as the area of coverage. Officials and residents should understand the difference between a weather *warning* and a *watch*, to better prepare for the pending hazard.

Action steps before, during, and after storms should be well thought out and planned out to ensure a smooth process.

6.6 Recommendations

- ⚡ Create a threat recognition system to prepare officials to warn the public in a timely manner.
- ⚡ Make FEMA's *Are You Ready?* Guide readily available to help preparation, response, and recovery for disasters.
- ⚡ Create and/or maintain Emergency Response Plans.
- ⚡ Perform tasks and activities to protect public health and safety and assist with recovery.

6.7 References

Are you ready? FEMA.

“Emergency Response Action Steps.” FEMA. 15Aug1006.
www.fema.gov/plan/ehp/response.shtm.

NWS Offices and Forecast Offices. www.crh.noaa.gov

NOAA Weather Radio All Hazards. www.nws.noaa.gov/nwr/. 2Nov2007.

“What is EAS?” www.nws.noaa.gov/om/NWS_EAS.shtml.

Chapter 7: Flood Control

To begin this chapter, it is important to reiterate the devastation floods can cause. Floods are the most common and widespread natural disaster in the nation. It is important to understand that flooding does occur as a natural process. Floods have shaped the landscape, provided habitat for flora and fauna, and contributed to the rich soils prevalent in the Illinois Valley.

Flood control projects are designed to keep floodwaters away from specific areas. They are also known as structural projects. Flood control projects are usually designed by engineers and managed or maintained by public works staff.

Understanding flooding in a specific area, understanding where floods have occurred and are likely to occur (see chapter 2), are the first steps in flood mitigation. Knowing flood control measures, how to mitigate for floods, and what has been done in a community are the next steps in the natural hazards mitigation project.

The controlling of floodwaters is a difficult task. The sections in this chapter are measures that can be implemented for flood control.

7.1 Channel Improvements

Improving a channel's conveyance is necessary in allowing more water to flow at higher velocities. Channel improvements improve water quality, can possibly aid in habitat restoration, and can possibly reduce flooding. The expense involved includes the time and money for implementation and maintenance, as well as the engineer and hydrologist most likely needed during the design phase.

Channel diversion is redirecting the water to another location to reduce flooding along an existing waterway. Diversions can be surface channels, overflow weirs, or tunnels. The diversion channels catch overflow and divert it to a receiving lake or river. Channel diversion can stabilize the streambank, and improve water quality. Channel diversion is expensive because of planning, design, implementation, and maintenance costs. The design is important because there are significant chances for channel failure if not designed properly.

According to the Army Corps of Engineers, channelization is the straightening, widening, or deepening of a stream or river channel.

7.2 Dams and Reservoirs

Reservoirs usually refer to an artificial lake, where water is stored for later use. Reservoirs temporarily store floodwaters behind dams or in detention basins. A dam is an artificial barrier that has the ability to impound water for the purpose of storage or water control. This barrier can be used as a means of reducing flooding.

Reservoirs reduce the amount of runoff before it flows downstream. When floodwaters have subsided the reservoir can be emptied by releasing the water or pumping it out. Reservoirs are more efficient in valleys where high volumes can be stored where room is available, or on smaller rivers where there is less water to store.

Dams have been designed and built in the United States for decades. Dams are expensive to build and maintain. The devastation that would occur if a dam were to fail is great for both people and the environment.

Local case study:

In 1960, four flood-control dams were built in the Village of Tiskilwa, in Bureau County. The Village has completed routine maintenance on the dams over the years but budgeting for major repairs and modifications is not feasible. The structures were designed as high hazard dams, but dam safety laws have changed and they are inadequate to handle the flow from large storms.

7.3 Drainage System Maintenance

Drainage system maintenance is an ongoing process to ensure blockages do not clog the downstream conveyance system. Drainage systems are intricate systems that need to be maintained to ensure the entire system functions properly. Since the stormwater conveyance system collects and transports runoff, there may be debris and pollutants that need to be removed from the catch basins, stormwater inlets, and other structures within the system. Maintenance will ensure clogs do not hinder the purpose of drainage systems, which is to prevent flooding.

Maintenance should not alter the shape of the channel or basin, it should however, help the velocity of flow. In Illinois, it is the responsibility of the landowner to maintain a drainage way on private property. The government should maintain the public property drainage ways. Preventive maintenance is much more cost effective than the alternative. Floods cause extensive costs in damages.

Best Management Practices suggest the following:

1. Regularly inspect facilities
2. Clean catch basins, drains, and conveyance structures before wet season
3. Inspect catch basins, drains, and conveyance structures more frequently during the wet season
4. Inspect for illegal dumping and discharging
5. Community reports and complaints

7.4 Ice Jam Prevention

Ice jams form when ice forms on top of rivers during the coldest months. In late winter the ice breaks up from warmer temperatures and as flows increase, ice blocks the river and forms an ice jam (see chapter 2 for more details).

The United States Army Corps of Engineers: Cold Region Research and Engineering Laboratory monitors and records ice jams and ice jam mitigation programs across the nation. There are many mitigation and removal measures, both with pros and cons, which can be used for ice jams. Any successful mitigation measure will be dependant upon the cost and the budget of the community. A community must determine what is feasible based on their individual situations.

Advance mitigation measures include:

1. Monitoring
2. Early warning
3. Ice weakening – drilling holes, dusting, blasting (not for urban areas)

Emergency mitigation measures include:

1. Traditional flood fighting – sand bagging, barriers, diversions
2. Excavation
3. Blasting
4. Do nothing

In 1994, Big Bureau Creek through Princeton, IL in Bureau County had a flood, which was caused by an ice jam. Also in 1994, north of the locks near Marseilles in LaSalle County, barges and tows were hindered by an ice jam on the Illinois River from Marseilles to Chicago.

7.5 Levees and Floodwalls

Levees (made of earth) and floodwalls (made of concrete) are, generally, embankments whose primary purpose is to provide flood protection from seasonal high water. Urban levees provide protection from flooding in communities, while agricultural levees provide protection from flooding in lands used for agricultural purposes. No levee or levee system provides full protection from all flooding. Levees and floodwalls tend to give a false sense of security because if heavy flooding occurs, more damage can be done when a levee or floodwall is in place.

There are five main types of levees:

1. Mainline and tributary – parallel the main channel and its tributaries
2. Ring – encircle an area in all directions
3. Setback – backup to an existing levee that has become endangered
4. Sublevees – constructed for the purpose of under seepage control
5. Spur – Project from the main levee and direct erosive river currents riverward

CRS credit points are provided based on the flood reoccurrence interval at the Levee Protection Level (LPL). The levee's flood protection level is 3 feet below the lowest point of the crown. The levee must be constructed before January 1, 1991, and the community must have a levee emergency plan that specifies what actions are to be taken at different flood stages.

7.6 Sedimentation

Sedimentation is the depositing of sand and silt in a river or channel. Sedimentation raises the channel bottom and forms sand bars and islands. This results in the slowing of the flow of water. The sand and silt come from construction, farms, and upstream riverbanks within the watershed. Sedimentation can be dealt with by dredging the channel or controlling the erosion.

Dredging is the most common way to remove sediments and increase the flow of water. It is a fast and safe and removes all sediment from the body of water. Dredging improves habitat and improve dissolved oxygen levels. However, dredging also is a band-aid approach. If where the sediment is occurring from is not resolved, the build up of sediment will reoccur. Dredging is extremely expensive and there is also a cost of land for sediment detention. Permitting is required for mechanical and hydraulic dredging. Hydraulic dredging needs a design phase and an implementation phase, both that must be overseen by a consultant or an engineer.

Site-specific best management practices (BMP) for erosion control have the following positive affects:

1. Water quality improvements by reducing sediment, nutrients, and other pollutants from entering the waterways
2. Reduce the need for dredging in the future
3. Possible habitat restoration
4. Possible flood reduction
5. Increased biodiversity

BMP for erosion control is expensive due to planning, time, and continued maintenance costs. The expertise needed depends on the BMP selected.

7.7 National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is, according to the Federal Emergency Management Agency (FEMA):

“A Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal government will make flood insurance available within the community as a financial protection against flood losses.”

According to IEMA, Floodplain management regulations are the cornerstone of the NFIP Participation. Communities that participate in the NFIP are expected to adopt and enforce floodplain management regulations. These regulations apply to all types of floodplain development. The regulations ensure that these floodplain development activities will not cause an increase in future flood damages. Buildings are required to be elevated at or above the base flood elevation. In Illinois, nearly all communities have adopted the State of Illinois Model Ordinance. That ordinance goes above and beyond NFIP minimum standards. In addition, the State of Illinois floodway regulations are much more restrictive than NFIP minimums. The following chart details what the individual participating communities are doing to stay NFIP compliant.

The following chart indicates the rules and regulations the participating communities have in place to regulate floodplains and stay compliant with the NFIP.

NFIP Compliance		
Community	NFIP Participant	Regulation
Bureau County	Yes	The County is very strict about having every applicant who wishes to build in an area that is designated as a possible floodplain to provide to our office an elevation certificate signed by a Registered Engineer, showing that the proposed project is at least 12" above the BFE, which is required by our Ordinance. They also ensure that every applicant who is required to contact the Illinois Department of Natural Resources, Office of Water Resources does so to apply for the three-part State Permit. Those documents must be filed with their building permit application, along with their elevation certificate before the issuance of a building permit for any construction. Once the construction has been completed, we require that a second elevation certificate be provided to our office showing that the finished construction meets the requirements of the Bureau County Floodplain Ordinance.
Village of Buda	Yes	No Special Flood Hazard Area (NSFHA)
Village of DePue	Yes	Ordinance 3-7-1: prevent unwise developments from increasing flood hazard to others, protect new buildings to flood damage, protect life and health, lessen the burden on tax payers, maintain property values
Village of LaMoille	N/A	Not Mapped.
City of Princeton	Yes	No permits are issued in floodplain areas.
Village of Seatonville	N/A	Not Mapped.
Village of Sheffield	N/A	Not Mapped – Covered by County Regulations.
City of Spring Valley	Yes	No new construction in the floodplain.
Village of Tiskilwa	Yes	The Village has adopted an Ordinance regulating construction. No permits are issued in floodplain areas.
Village of Walnut	Yes	No permits are issued in floodplain areas. Additions to existing structures require special permits.
Marshall County	Yes	Floodplain Ordinance. No new construction in the floodplain.
City of Henry	Yes	Floodplain Ordinance regulating construction. No permits are issued in floodplain areas.
City of Lacon	NO	Does not participate.
Village of Sparland	Yes	Floodplain Ordinance regulating construction in the floodplain.
City of Toluca*	Yes	Ordinance to control development in floodplain.
City of Wenona	Yes	No permits are issued in floodplain areas.
Stark County	Yes	Floodplain Ordinance regulating construction. No permits are issued in floodplain areas.
Village of Bradford	Yes	Floodplain Ordinance regulating construction. No permits are issued in floodplain areas.
Village of LaFayette	Yes	No Special Flood Hazard Area (NSFHA)
City of Toulon	Yes	Floodplain Ordinance regulating construction. No permits are issued in floodplain areas.
City of Wyoming	Yes	Floodplain Ordinance regulating construction. No permits are issued in floodplain areas.

*Ordinance on file at Village/City Hall and at NCICG.

The following information was gathered, by questionnaire, from the participating communities of the NHMP. Contact information for the floodplain managers is located in **Appendix K**. Jurisdictions will prioritize and analyze their actions, related to continued compliance with the NFIP, by using cost-benefit analysis (see section 9.2 for a description).

Contact information for the Floodplain Manager for Bureau County including unincorporated Bureau County as well as the following Villages and Towns: Arlington; **Buda**; Bureau; Cherry; Dover; Hollowayville; **LaMoille**; Malden; Manlius; Mineral; New Bedford; Ohio; **Sheffield**; and Wyanet is the Bureau County Zoning & Enforcement Officer.

The following Cities, Villages and Towns administer their own Zoning and Floodplain Management: Dalzell; **DePue**; Ladd; Neponset; **Princeton**; **Seatonville**; **Spring Valley**; **Tiskilwa** and **Walnut**.

Bureau County:

The County covers an area of approximately 868 square miles. Many homes, business and agricultural structures were built prior to zoning and floodplain management, some dating back to as early as the mid 1800's. Due to the large amount of area in Bureau County and lack of staff in the Zoning / ESDA Office, it would be difficult, if not impossible, for our personnel to identify every property located in a floodplain in Bureau County. Once the Flood Insurance Rate Map Modernization Project has been completed for Bureau County and the floodplain information is available electronically, the task of identifying properties located in a floodplain may become more feasible. In the areas governed by the Bureau County Zoning Ordinance, since 1990, no building permits have been issued to build any structure below the base flood elevation (BFE).

The County has no electronic version of a flood plain mapping system or the staff members to transfer the flood plain information from the current paper maps to an aerial photograph, we have no official record of what, if any, current critical facilities or infrastructure might be located in the floodplain. One of our goals with the Flood Insurance Rate Map Modernization Project is to identify critical facilities and infrastructure on our County's GIS system. Once that has been accomplished, a list of critical facilities and infrastructure located in a floodplain would be able to be compiled. The Flood Insurance Rate Map Modernization Project is expected to take about three years to complete.

Village of Buda:

No structures in the floodplain.

Village of DePue

The Village has 55 single-family residential, 6 multi-family residential, and 5 businesses. There is also a park with a restroom and a soccer field. There are four critical facilities in the floodplain: the Village Clerks Office, Police Department, Water Plant, and Sewage Disposal Plant.

Village of LaMoille:

The wastewater treatment plant and five residential structures are located in the floodplain.

City of Princeton:

The City has two residential structures in the floodplain.

Village of Seatonville:

The Village has eight (8) residential and one non-residential structure in the floodplain.

Village of Sheffield:

There are no structures in the floodplain.

City of Spring Valley:

There are four residential structures and the wastewater treatment facility in the floodplain.

Village of Tiskilwa:

The sewer treatment plant is in the floodplain but the pond walls are above flood stage. This is the only critical facility in the floodplain. There are no other buildings in the floodplain.

Village of Walnut:

There are 21 residential structures, two commercial structures, a school, a retirement home, and the wastewater treatment plant in the floodplain.

County of Marshall:

There are 30 structures in the floodplain.

City of Henry:

There are 13 residential structures, one industrial structure, and one commercial structure in the floodplain.

City of Lacon:

The city has two industrial and four commercial structures in the floodplain.

Village of Sparland:

Five residential and four commercial buildings are in the floodplain, along with the Village Hall and wastewater treatment plant.

City of Toluca:

The City has 6 residential buildings in the floodplain and one commercial. There are no critical facilities in the floodplain.

City of Wenona:

The lift station and wastewater treatment plant are in the floodplain. No other buildings are in the floodplain.

County of Stark:

The rural areas of the county have either farm ground or timbers in the floodplain.

Village of Bradford:

There are 2 residential houses in the floodplain. There are no critical facilities.

Village of Lafayette:

The Village does not have a floodplain. Therefore, there are no buildings in the Floodplain and they do not participate in the NFIP.

City of Toulon:

There are 12 residential houses in the floodplain. There are no critical facilities.

City of Wyoming:

There are two houses and two commercial buildings in the floodplain. There are no critical facilities in the floodplain.

7.8 Conclusions

Floods are the most common and widespread natural disasters. Flood control measures vary in cost, time, and level of difficulty.

Channel improvements, dams and reservoirs, levees and floodwalls, and sedimentation removal are expensive, and require an engineer and a hydrologist to research and design. They all require maintenance so they do not cause more harm than good.

Drainage system maintenance requires maintenance, which in turn is a cost. There are best management practices suggested, such as inspecting for illegal dumping, that can overall in the long-term reduce the maintenance costs.

Ice Jam prevention has two stages, which are advance mitigation measures and emergency mitigation measures. Communities must determine the best measure based on their individual situations.

7.9 Recommendations

- ⚡ Work with the Army Corps of Engineers on ongoing projects within the jurisdictions.
- ⚡ Maintain drainage systems to ensure proper function.
- ⚡ Identify problem areas where ice jams may form and know available options.
- ⚡ Monitor existing dams, levees and floodwalls.
- ⚡ Use best management practices for erosion control.

7.10 References

Community Rating System Resource Center. Emergency Management Institute.
<http://training.fema.gov/EMIWeb/CRS/Index.htm>

“Dams in Danger: People at Risk?” Reinvesting in America’s Watersheds: A Special Report. Mar1999.

“Drainage System Maintenance.” California Stormwater BMP Handbook. Jan2003.

“Levees.” www.fema.gov. 6Nov2007.

US Army Corps of Engineers. www.mvm.usace.army.mil

Various pages from the Cold Region Research and Engineering Laboratory website:
www.crrel.usace.army.mil/

Walkenbach, Amy. Illinois EPA. 16 November 2007.

Chapter 8: Public Information

Informing the public about natural hazard mitigation is an important step in the process of implementing natural hazard mitigation. If the public is unaware of the hazard, the possible damages, and the steps to recovery, the process will be slowed due to lack of knowledge from being uninformed. Public information activities inform property owners, businesses, renters, and local officials about hazards and how to protect themselves before, during, and after a natural hazard event.

When the public is properly informed they are able to make their own decisions concerning their lives and the lives of their families. Making informed decisions can make all the difference, including saving the government expenses.

8.1 Outreach Projects

Outreach projects are designed to inform the public about hazards and encourage them to take their own steps and precautions to protect themselves. People need to be told about the hazard, and what can be done about the hazard. Safety, health, and property protection measures must be included in outreach activity projects. Outreach programs are effective on the National level but are more effective on the local level where people can believe that a hazard could, in fact, affect them personally.

Effective outreach projects include home mailings and media, such as newspapers, radio, and television. Displays in public buildings and brochures available in municipal buildings and libraries are also very valuable for the distribution of information. Responding to inquiries will give citizens the full knowledge needed. Just informing citizens is not enough; involving them is imperative to achieve any goals to reduce damages from potential hazards.

CRS credits are given for:

1. Written information being sent to all properties in the community
2. Sending notice to properties in the flood prone areas clearly explaining the property is subject to flooding
3. Conducting three additional projects such as a “flood awareness week”, or newspaper flyers
4. Implementing additional projects that are identified in a public information program strategy
5. Distribution of letter/brochure about flood insurance to all properties in the community

8.2 Real Estate Disclosure

There are three regulations that require potential buyers of a parcel to be told about their risk of exposure to a hazard. There is one Federal Act, one State Act, and one State statute.

CRS credit may be obtained based on the following:

1. If real estate agents notify those interested in the SFHA about flood hazard and flood insurance purchase requirement.
2. If there is a State law requiring real estate agents to disclose the flood hazard in the SFHA.
3. If other disclosure methods required by law are used, such as signs or deeds.
4. If real estate agents provide brochures/handouts that advise potential buyers to investigate the flood hazard for a property.
5. If the notification to potential buyers includes disclosure of other flood-related hazards, such as erosion or wetlands.

8.3 Information

As people become aware that hazards are out there or their property is subject to hazard, they may want to learn more about it. The public library or community website is a logical place to start. People can look up information and seek further knowledge of natural hazards and how to protect themselves and their property.

Libraries hold a vast array of information in a number of different outlets. Books, pamphlets, videos, brochures, and other media are available. Giving information on natural hazard mitigation to a local library, especially if that information concerns the local community, can assist the citizens in learning how to protect them. Not everyone has access to the Internet, so libraries should be provided with hardcopies of information so everyone has access.

The World Wide Web or Internet is becoming more and more popular as time progresses. Adults as well as children use Websites readily, to gather information. The Internet provides access to public and private sites and vast sources of information. Many websites have “for kids” sections to entice children to read and learn about different topics. Internet data can be updated regularly for current information, however, be sure to use reliable sources. This NHMP will be available on line for easy community access.

CRS Credit is given if:

1. The local public library contains at least one document, which is entered into the library's card catalog or system so patrons can locate publications related to floods and flood protection. The following are some of the documents worth credit:
 - a. Copy of the community's FIRM, flood boundary, Floodway map and their use
 - b. Documents on flood insurance
 - c. Documents on protecting a building
 - d. Documents on floodplain management or mitigation
 - e. Documents on the natural/beneficial functions of floodplains
 - f. A current directory of local offices that can provide more information
 - g. Document on the special hazards that affect the community
2. There are documents keyed to local or State conditions.
3. The community's website provides links or information on flood protection.

8.4 Assistance

Providing information about natural hazard mitigation is helpful to start the process of protecting lives and property. While informed residents and business owners will be aware of the hazards and the steps they can take to protect themselves, they may not be comfortable in the decision to start taking measures. Local building department staffs can help to guide residents in the right direction. A free service to help residents could encourage them to start protection measures on their own. Building departments can also assist residents when permits are necessary.

Assisting residents and owners in reading flood maps is also helpful. Helping willing people before a flood is more logical than helping them after a flood when damage could already be done. Assistance is also available on the internet at www.fema.gov.

CRS credits are available for flood protection assistance. Credit is provided if a community provides technical advice to interested property owners and publicizes the services available. Credit is given for:

1. Providing site-specific flood and flood related data.
2. Providing names of contractors/consultants knowledgeable/experienced in retrofitting techniques.
3. Providing materials on how to select a qualified contractor and the recourse if dissatisfied with the contractor's performance.
4. Making site visits to review issues and provide advice.
5. Providing advice and assistance on the retrofitting techniques
6. If the person providing the advice and assistance on retrofitting techniques has graduated from the Retrofitting Flood prone Residential Buildings course at the Emergency Management Institute.

CRS credits are also provided if the community maintains FEMA elevation certificates for new and substantially improved construction. The following activities are available for credit:

1. Maintain FEMA elevation certificates on all buildings built in the SFHA after the date of application to the CRS. All communities applying for CRS must apply for this element.
2. Maintain elevation certificates on buildings built before the date of application to the CRS but after the date of the FIRM.
3. Maintain elevation certificates on buildings built before the initial date of the FIRM.
4. Provide elevation certificate data in computer format.
5. Put elevation certificate data on a publicly accessible website.

8.5 Public Information Program Strategy

A public information program strategy is a document that receives CRS credit. It reviews local conditions, local public information needs, and a recommended action plan. A strategy consists of the following parts:

1. The local flood hazard – discussed in chapter 2
2. Property protection measures – discussed in chapter 5
3. Safety measures – discussed in...
4. Public information activities currently being implemented –
5. Goals for community's public information program –
6. Annual outreach projects –
7. Process to monitor and evaluate projects –

8.6 Conclusions

There are many different public information outlets for communities to make use of. Measures include but are not limited to public outreach projects, giving information to libraries, having information accessible to the public in public offices, and using the Internet. Providing assistance to residents is also a useful measure. Public information outlets are also valuable for CRS credit.

8.7 Recommendations

- ⚡ Inform property owners, businesses, renters, and local officials about hazards and how to protect themselves before, during, and after an event.
- ⚡ Make natural hazard information available via offices, libraries, and the Internet.
- ⚡ Assist residents and business owners in gathering information to hazard-proof their properties.
- ⚡ Encourage participation in the Community Rating System (CRS).

8.8 References

Community Rating System Resource Center. Emergency Management Institute.
<http://training.fema.gov/EMIWeb/CRS/Index.htm>

Kankakee County NHMP. 20007.

Chapter 9: Goals and Objectives

9.1 Goals

Goals are important to set because it gives a community a point of reference, a point of direction, and a completion point. It is important to set goals so people and communities are fully aware of what is expected.

Goal 1: Protect the lives, health, and safety of the citizens of Bureau, Marshall, and Stark Counties through education about natural hazards.

1. Work together as a region to share existing resources to help inform the public about natural hazards.
2. Hold workshops throughout the region to inform the public about hazard mitigation.
3. Have literature about natural hazard and hazard mitigation available for people at town and village halls.

Goal 2: Reduce the loss of public and private property, especially critical facilities and infrastructure, through proper planning.

1. Work with local regional planning agency to see what planning resources are available.
2. When locating new critical facilities, consult floodplain maps to ensure location will not be affected.
3. Attempt to use the floodplain buyout programs to reduce the number of structures in the floodplain.

Goal 3: Protect and preserve the rivers and floodplains, especially the Illinois River, in order to reduce loss from flooding.

1. Consider working on greenways plan that can preserve the floodplain from development.
2. Consider the use of property protection measures and/or flood control measures to maintain channel depth and proper stream flow.

Goal 4: Manage future development to mitigate the affect of natural hazards on Bureau, Marshall, and Stark Counties.

1. Consider the adoption of the International Building Codes.
2. Work with developers to create weather safe rooms in new construction.
3. Work with planning commission to consider implementation of subdivision ordinances that include concepts such as underground electrical service.

Goal 5: Identify and evaluate specific projects in Bureau, Marshall, and Stark Counties to achieve hazard mitigation.

1. Work with other communities in the region when considering a mitigation project.
2. Continue to identify local flooding problems and address them with your regional coordinator.
3. Compile a list of potential problems in your community and work to rank them in order of urgency.

The goals are prioritized according to what the communities deem important. The lives of the citizens within the community are the number one asset to be protected. The first goal is for protection of the citizens. The protection of their property, and then the natural resource (the Illinois River) that has potential to cause damage come second and third. The last two goals are ways to control future projects from becoming damage statistics. The last two goals also are imperative to the first three goals.

The City of Princeton in Bureau County adopted its current comprehensive plan in 2003. The plan included 12 elements that pertained to the goals and objectives. The goals and objectives relating to this NHMP are listed below.

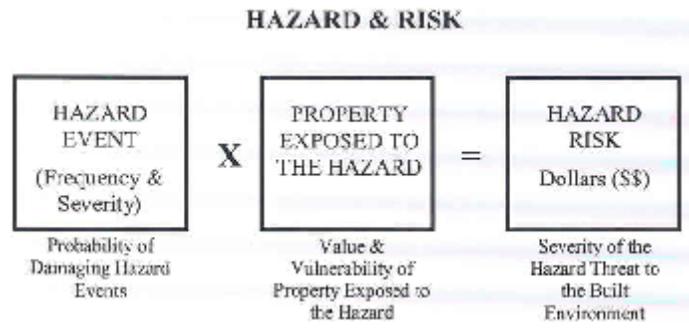
1. Continue monitoring and maintenance of water supply, sanitary sewer, and storm sewer systems.
2. Provide proper landscaping and other screening of public facilities to ensure they are sound and attractive.
3. Share resources between the City and other jurisdictions to more efficiently deliver services and enhance cost saving.

9.2 Action Item and Priority

Every participating community received a list with twenty-five (25) action items. The community's were asked to choose at least two (2) items that are important to their community. After the action items were chosen, the community had to prioritize the action items from a list of priorities rated A-E. These selections indicate the community's agreement to consider completing the action items selected. Once the action items were selected, the communities then had to determine who was responsible for completing the tasks, how much the tasks costs, when they would be completed, and from what source the funding would come from. Action Items 26 and 27 were designated to each community based on whether their participation in the NFIP. The complete list of community chosen action items is located in **Appendix L**.

Each jurisdiction can use comprehensive land use plans, subdivision, storm water, and zoning ordinances to enforce the concepts of the NHMP. When appropriate communities can and will incorporate mitigation strategies in their planning activities.

A cost-benefit analysis needs to be considered when deciding on what action items are going to be completed and carried out. The benefit of the item needs to be compared to the cost of the item. The following formula, from FEMA, is one way to conduct a cost-benefit analysis. This should be done for any and all of the community selected action items.



9.3 Monitor, Evaluate, Update

North Central Illinois Council of Governments will monitor and evaluate this NHMP in six months, following the adoption of the plan. The next meeting will occur at one year from adoption, and then annually thereafter, for five years. Each individual community must do their own implementing and executing of goals and action items. Updating the plan, by FEMA regulation, must be completed every five years. At the time of these meetings each jurisdiction will be responsible for reporting on the progress of their action items.

Keeping the public informed and up to date is a priority. When the plans will be updated, meetings will be published in the relevant papers, and the information will be on

the NCICG website (www.ncicg.org) as well. Outside communities and the public will be invited to all the meetings regarding the updating of the plan.

Communities participating in the plan chose their own schedule (listed below) for evaluating the plan. The person and department responsible for the evaluating of the plan is the main contact person from each participating jurisdiction. The contact information is located at the end of this chapter. Each community will review the plan and accordingly make notes for updating. After one year from adoption NCICG staff will mail notices reminding communities of their obligation for evaluation. NCICG will also plan meetings to update the plan after one-year and make sure communities understand what it entails. The following are when each community plans to evaluate the NHMP:

Bureau County: The County's Emergency Operations Plan (EOP) is updated and reviewed by the State of Illinois (Illinois Emergency Management Agency) every two years. Bureau County would review the Natural Hazard Mitigation Plan (NHMP) every two years, on the opposite year of the EOP review. The Emergency Operations Plan working group, which consists of area elected officials, fire, law enforcement, Soil and Water Conservation District, EMS, hospitals, public health, zoning, emergency management, and others, would review the NHMP for Bureau County. Once the EOP group has updated the plan, their recommendations will be taken to the Bureau County Board's Zoning & ESDA Committee, who would in turn take the updated plan to the full Bureau County Board for their approval.

Village of Buda: Same as Bureau County

Village of DePue: The Village will evaluate the plan annually.

Village of LaMoille: The Village will evaluate the plan annually.

City of Princeton: The City will evaluate the plan annually.

Village of Seatonville: The Village will evaluate the plan annually.

Village of Sheffield: Same as Bureau County

City of Spring Valley: The City will evaluate the plan annually.

Village of Tiskilwa: The Village will evaluate the plan annually.

Village of Walnut: The Village will evaluate the plan annually.

Marshall County: The County will evaluate the plan annually.

City of Henry: The City will evaluate the plan annually.

City of Lacon: The City will evaluate the plan annually.

Village of Sparland: The Village will evaluate the plan annually.

City of Toluca: The City will evaluate the plan annually.

City of Wenona: The Village will evaluate the plan annually.

Stark County: The County will evaluate the plan annually.

Village of Bradford: The Village will evaluate the plan annually.

Village of Lafayette: The Village will evaluate the plan annually.

City of Toulon: The City will evaluate the plan annually.

City of Wyoming: The City will evaluate the plan annually.

Natural Hazards Mitigation Plan CONTACT LIST						
Bureau County						
Community	Name	Title	e-mail Address	Street/PO Box	City/State/Zip	Phone
Bureau County	Marc Wilt	County Chairman				
	Kris Donarski	ESDA Coordinator	bcedal@yahoo.com	Room B-5, Courthouse, 700 S. Main St.	Princeton, IL 61356	815-875-2077
Village of Buda	Joel Van Drew	President		106 E. Main St., PO Box 65	Buda, IL 61314	309-895-2408
	Pete De Freezer	Commissioner		106 E. Main St., PO Box 65	Buda, IL 61314	309-895-2408
Village of Depue	Eric Bryant	Village Trustee	ebryant13@hotmail.com	PO Pox 1068	DePue, IL 61322	815-228-1329
Village of LaMoille	Steve Sondgeroth	Village Trustee	sksfarms@hotmail.com	101 Canal St	LaMoille, IL 61330	815-866-3905
City of Princeton	Keith Cain	Mayor		2 S. Main St.	Princeton, IL 61356	815-875-2631
	Pete Nelson	Planning & Zoning Administrator	pnelson@princeton-il.com	2 S. main St.	Princeton, IL 61356	815-879-3381
	Jeff Fiegenschuh	City Manager	jfiegenschuh@princeton-il.com	2 S. main St.	Princeton, IL 61356	815-879-5071
	Gary Hanna	Fire Chief	ghanna@princeton-il.com	2 S. main St.	Princeton, IL 61356	815-875-1861
Village of Seatonville	Richard Piontek	President		105 N. Center, PO Box 109	Seatonville, IL 61359	815-894-2081
	Chad Errio	Village Trustee, Training Officer SFD	seatonvillefiretraining@yahoo.com	110 N. Center, PO Box 27	Seatonville, IL 61359	815-303-9425
	Zach Plym	Village Trustee	zachplym@yahoo.com	206 2nd St, PO Box 163	Seatonville, IL 61359	815-894-3597
	Bill Heitz			307 S. Main St., PO Box 136	Seatonville, IL 61359	815-894-2078
Village of Sheffield	William Rosenow	Mayor	williamrosenow@hotmail.com	121 S Church St, PO Box218	Sheffield, IL 61361	815-454-2034
City of Spring Valley	Debb Ladgenski	Economic Development	sveconomics@comcast.net	215 N. Greenwood St	Spring Valley, IL 61362	815-664-2753
	Michael L. Miroux	Fire Chief	chiefmiroux@comcast.net	215 N. Greenwood St	Spring Valley, IL 61362	815-663-2351
Village of Tiskilwa	Randy Philhower	President		PO Box 433	Tiskilwa, IL61368	815-646-4481
Village of Walnut	Gary Brooks	President		114 Jackson, PO Box 604	Walnut, IL 61376	815-379-2351
Marshall County						
Community	Name	Title	e-mail Address	Street/PO Box	City/State/Zip	Phone
Marshall County	Dennis Bogner	County Chairman				
	Neil Pobanz	Marshall Co EMA	laconaero@aol.com			309-246-2295
City of Henry	Daryl Fountain	Mayor		426 E. Park Row, PO Box 196	Henry, IL 61537	309-364-3056
	Jim Lykins	ESDA Coordinator				
City of Lacon	Mike Heill	Mayor		406 5th St.	Lacon, IL 61540	309-246-6111
City of Toluca	Larry L. Harber	Mayor		102 N. Mian St., PO Box516	Toluca, IL 61369	815-452-2406
	Dave Dollinger	Coordinator	cityhall@maxiis.com	423 N. Cedar St	Toluca, IL 61369	815-257-2101
	Stephen Piazze	ESDA Coordinator		520 N Linden St	Toluca, IL 61369	815-452-2241
Stark County						
Community	Name	Title	e-mail Address	Street/PO Box	City/State/Zip	Phone
Stark County	Fred Sams	ESDA Coordinator	indiancreek@main1.net	RR2, PO Box 133	Toulon, IL 61483	309-286-5302/309-525-5302
Village of Bradford	Fred Sams	ESDA Coordinator	indiancreek@main1.net	RR2, PO Box 133	Toulon, IL 61483	309-286-5302/309-525-5302
Village of Lafayette	Carl Peeve	President		610 Hodgson, PO Box 186	LaFayette, IL	309-995-3885
City of Toulon	Fred Sams	ESDA Coordinator	indiancreek@main1.net	RR2, PO Box 133	Toulon, IL 61483	309-286-5302/309-525-5302
City of Wyoming	Steve Hansard	President				309-238-2339/309-695-2301
	Fred Sams	ESDA Coordinator	indiancreek@main1.net	RR2, PO Box 133	Toulon, IL 61483	309-286-5302/309-525-5302
Names in BOLD are the primary Contact						



Natural Hazards Mitigation Plan Meeting



Monday, February 27, 2006 @ 7:00 pm
**Board Room in the Bureau County Courthouse, South Main
 Street(enter in west door), Princeton**

.....
Bureau County and North Central Illinois Council of Governments

A meeting regarding the development of a Natural Hazards Mitigation Plan for the Bureau, Marshall and Stark County area is being held Monday, February 27, 2006. The plan will include the municipalities in the three counties that want to participate in the plan. The meeting is being held in the Board Room at the Bureau County Courthouse (enter in west door), South Main Street, Princeton 7:00 pm. Any person or organization that is interested in participating in the development of the plan is invited to attend. This meeting is being held to inform what a Natural Hazards Mitigation Plan is and the process that will be gone through to develop the plan. Each municipality in Bureau, Marshall and Stark Counties is being invited to participate in the plan.

PLEASE POST THIS MESSAGE



NCICGG
 North Central Illinois Council of Governments

North Central Illinois Council of Governments
 110 North Main
 Princeton, IL 61356
 Phone: 815/875-3396
 Fax: 815/875-3397
 Email: planning@ncicg.org



For immediate release
September 11, 2008

PRESS RELEASE

Contact: Kevin Lindeman, AICP - Senior Planner or
Suzanne Miske – Community Planner
North Central Illinois Council of Governments for questions contact at
815/875-3396 or smiske@ncicg.org

Bureau County, Marshall County and Stark County Natural Hazards Mitigation Plan

What are the natural hazards that are likely to occur in Bureau, Marshall, and Stark Counties? They are floods, tornadoes, winter/ice storms, thunderstorms, hail, and extreme temperatures! The hazard events, protection measures, and community action items are all portions of the Natural Hazards Mitigation Plan. The DRAFT plan will be discussed at the next Bureau County, Marshall County and Stark County Natural Hazards Mitigation Plan meeting being held Thursday, September 25, 2008 at 6:30pm. The meeting is being held at Bureau County Courthouse, 700 S. Main St., Princeton, 61356. This Natural Hazards Mitigation Plan covers the Bureau County, Marshall County, and Stark County area and the municipalities in the two counties that wanted to participate. The communities have been invited to participate and were asked to pass a participation resolution if they were going to be involved in the development of the plan. If a community participates in the process they will have a FEMA approved Natural Hazards Mitigation Plan at no cost to them upon the completion of the plan.

This meeting is open to the public and any person or organization that is interested in participating in the discussion of the DRAFT Natural Hazards Mitigation Plan are encouraged and invited to attend. For more information contact Suzanne Miske at (815) 875-3396.

#

Natural Hazards Mitigation Plan Development Meeting Planned

A meeting regarding the development of a Natural Hazards Mitigation Plan for the Bureau, Marshall and Stark area is being held Mon., Feb. 27, 2006. Bureau County is inviting Marshall and Stark Counties and the municipalities in the three counties to participate in the plan. The meeting is being held in the County Board Room at the Bureau County Courthouse, South Main, Princeton at 7 p.m. Participants can enter the building through the west door of the courthouse. Any person or organization that is interested in participating in the development of the plan is invited to attend. This meeting is being held to inform what a Natural Hazards Mitigation Plan is and the process that will be gone through to develop the plan.

Bureau County and the North Central Illinois Council of Governments are joining efforts to produce a Natural Hazards Mitigation Plan for Bureau, Marshall and Stark County area. The project

also includes the municipalities in the three counties that want to participate. Bureau County has received a \$21,100 Flood Mitigation Assistance (FMA) Grant to join with a \$15,510 Hazard Mitigation Grant (HMGP) the North Central Illinois Council of Governments has received. The total project cost is \$48,846.

The Counties and municipalities will not have to expend any funds for the development of the Natural Hazards Mitigation Plan. FEMA covers 75 percent of the project cost and the local match is 25 percent. The local match will be covered by in kind services of 12.5 percent (which includes time accounted for local officials attending meetings for the plan, will document all in kind hours will be documented) and hard match from local jurisdictions and NCICG is 12.5 percent (staff time of any local government (during office hours) spent on the development of the plan).

Letters will be going out to the

County Board Chairmen of Marshall and Stark County and to all the mayors in Bureau, Marshall and Stark Counties asking if they would like to participate in the plan. If they want to participate they will be asked to pass a resolution of participation. The communities will be asked to appoint a representative to the planning committee. In order for a municipality to be able to adopt the plan as their own, they will need to participate in the planning process. If they participate in the process, a municipality will have adopted a FEMA approved Natural Hazards Mitigation Plan at no cost to them.

Mitigation is defined as "sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects." Mitigation Planning is a collaborative process whereby hazards affecting the community are identified, vulnerability to hazards assessed, and consensus reached on how to minimize or eliminate the effects of these hazards.

The funds for the Natural Hazards Mitigation Plan are coming from two FEMA programs. The Flood Mitigation Assistance (FMA) program provides funding to assist communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). The Hazard Mitigation Grant (HMGP) program provides local governments financial assistance to implement measures that will permanently reduce or eliminate future damages and losses from natural hazards through safer building practices and improving existing structures and supporting infrastructure.

The Plan will include a risk assessment of natural hazards in Bureau, Marshall and Stark Counties. This section of the plan will identify the characteristics and potential consequences of hazards. It is important to understand how much of the community can be affected by a specific hazard and what impacts would be on important community assets. The risk assessment may include looking at the affects of a flood, tornado, winter/ice storms, earthquakes and thunderstorms. After assessing the risk of these events, the plan will then look at possible ways to avoid or minimize the undesired affects. The Plan will be submitted to the State Hazard Mitigation Officer and FEMA for review and final approval. Implementation of the Plan can be done by implementing specific projects or by making changes in the day-to-day operations of the local governments. To insure proper implementation periodic evaluations and revisions need to be done.

Local Mitigation Plans must be reviewed and reapproved by FEMA every five years.

HENRY NEWS REPUBLICAN
February 15, 2006 Henry



Print Page

THURSDAY SEPTEMBER 25, 2008 Last modified: Thursday, September 18, 2008 12:28 AM CDT

Counties to discuss hazard plan

PRINCETON — The DRAFT plan, a natural hazards mitigation plan, will be discussed by Bureau, Marshall and Stark counties in a meeting at 6:30 p.m. Sept. 25 at the Bureau County Courthouse. The meeting is open to the public.

The DRAFT plan covers hazard events such as floods, tornadoes, winter ice storms, thunderstorms, hail and extreme temperatures. The hazard events, protection measures and community action items are all portions of the Natural Hazards Mitigation Plan.

The Natural Hazards Mitigation Plan covers the Bureau, Marshall and Stark county area and the municipalities in the two counties that wanted to participate. The communities were asked to pass a participation resolution if they were going to be involved in the development of the plan. If a community participates in the process they will have a FEMA approved Natural Hazards Mitigation Plan at no cost to them upon the completion of the plan.

For more information, contact Suzanne Miske at (815) 875-3396.

NHMP Goals Exercise 1

Tuesday, April 25, 2006

What would you most like to see in the county's future?

Choose the five answers you think are the most important for your county:

- | | |
|-----------|---|
| ___ 2 ___ | Educated children |
| ___ 0 ___ | Improved air quality |
| ___ 3 ___ | Improved roads and transportation |
| ___ 1 ___ | Improved water quality |
| ___ 3 ___ | Improved/more businesses |
| ___ 0 ___ | Improved/more cultural facilities |
| ___ 0 ___ | Improved/more housing |
| ___ 3 ___ | Improved/more job opportunities |
| ___ 0 ___ | Improved/more open space |
| ___ 1 ___ | Improved/more public transportation |
| ___ 0 ___ | Improved/more recreation facilities |
| ___ 0 ___ | Improved/ more shopping |
| ___ 1 ___ | Improved/stronger agricultural sector |
| ___ 0 ___ | Less new development |
| ___ 0 ___ | Less traffic congestion |
| ___ 1 ___ | More knowledgeable residents |
| ___ 0 ___ | New development confined to areas already developed |
| ___ 1 ___ | Preserved historical/cultural sites |
| ___ 0 ___ | Special attention given to elderly/disabled |
| ___ 1 ___ | Special attention given to farmers |
| ___ 0 ___ | Special attention given to lower income areas |
| ___ 0 ___ | Special attention given to minority neighborhoods |
| ___ 0 ___ | Special attention given to newer shopping areas |
| ___ 1 ___ | Special attention given to older business areas |
| ___ 3 ___ | Younger people staying/moving into the area |
| ___ 1 ___ | Other: Planning |
| ___ 1 ___ | Other: Less military action |

NHMP Goals Exercise 2

Tuesday, April 25, 2006

What should be the goals of this mitigation program?

Choose the five answers you think are the most important for your county:

- 4 Help people protect themselves
- 1 Make sure future development does not make things worse
- 0 Maximize the share paid by benefiting property owners
- 2 Maximize use of state and federal funds
- 0 Minimize property owner's expenditures
- 0 Minimize public expenditures
- 1 New developments should pay the full cost of protection measures
- 1 Protect business from damage
- 0 Protect cars and other vehicles
- 0 Protect centers of employment
- 5 Protect critical facilities
- 0 Protect farms, crops, and livestock
- 0 Protect forests
- 0 Protect homes
- 0 Protect new/future buildings
- 5 Protect people's lives
- 2 Protect public health
- 0 Protect public services (fire, police, etc.)
- 0 Protect repetitively flooded areas
- 0 Protect roads, streets, and bridges
- 0 Protect scenic areas, greenways, etc.
- 0 Protect schools
- 0 Protect shopping areas
- 3 Protect utilities (power, phone, water, sewer, etc.)
- 1 Protect wetlands/environmentally sensitive areas
- 0 Restrict development in hazardous areas
- 0 Use public/private partnerships

NHMP Goals Exercise 3

Tuesday, April 25, 2006

What natural hazards could potentially have the most impact on your county?

Choose the five answers you think are the most important for your county:

___1___	Dam Failure
___4___	Drought/Heat
___1___	Earthquakes
___0___	Landslides
___4___	Local drainage problems
___2___	Overbank flooding problems
___4___	Thunderstorms
___5___	Tornados
___0___	Wildfires
___4___	Winter storms
___1___	Other: Hail

Natural Hazard Mitigation Plan Survey

- Does your community have a comprehensive plan? _____
- If yes what year was it adopted? _____
- Does the plan address natural hazards? _____
- Does the future land use map reflect any floodplain issues?

- What year was your latest zoning ordinance adopted?

- Does the zoning ordinance address natural hazards (floodplains, etc.)?

- Does your town have a subdivision ordinance? _____
- If yes, what year was it adopted? _____
- Are there minimum street and cul de sac standards regarding road width and height above flood level? _____
- Are new developments required to set aside drainage ways as public easements?

- Are utility lines required to be buried? _____
- Does your town have building codes in place? _____
- If yes, what code is used and what year is the code? _____
- Are all new buildings inspected? _____
- Is your town part of the National Flood Insurance Program?

- If yes, what year did the town become part of the program?

- When did a Community Assistance Visit (CAV) take place?

- Does your town have a newsletter? _____
- Does your town have a website? _____
- If yes to either, do they include info on potential hazards?

- Are there any critical facilities/buildings located within a floodplain?

- Does your town participate in the CRS program? _____
- Has the city done anything to prevent flood problems or taken buildings out of the floodplain? If yes, please describe where and how. _____
- Does your town have a stormwater management ordinance?

- If yes, what year was it adopted? _____
- List all village contacts who should be part of the NHMP process (Name and Phone Number)

- List the number of repetitive loss areas (do not need specific properties). Repetitive loss areas are considered as at least two flood insurance claims of at least \$1000 since 1978.
- List the number of flood insurance claims for single-family and non-residential and the average claim cost for each since 1978.
- Identify other flood prone areas (plot/mark on map, if available).
- Please bring a copy of the CAV report if you have one.
- Please bring a copy of your town newsletter, if applicable.
- List the number of buildings in your town by category (single-family homes, manufactured homes, multiple-family residential units, non-residential buildings).
- List the number of buildings in your town by category in a floodplain (single-family homes, manufactured homes, multiple-family residential units, non-residential buildings).
- List/map each critical facility/building located within a floodplain in your town (schools, public buildings, siren locations, churches, bridges potentially affected by flood, health facilities, etc).
- List areas obstructing or impeding flow water during floods.

RESOLUTION NO. 08-08-11**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of Buda is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village/City/County of Buda to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council/ County Board of the Village/City/County of Buda hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 11th day of August 2006. 2008.

[Signature]
_____, Mayor

ATTEST: Virginia Bollinger
_____, Village/City/County Clerk



RESOLUTION NO. 01-06

A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the Village/City/County of DePue is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village/City/County of DePue to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council/ County Board of the Village/City/County of DePue hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 22 day of May 2006.

[Signature]
Mayor Village President Pro Temp

ATTEST: [Signature]
Village/City/ County Clerk

RESOLUTION NO. R-4-08-9-23

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village of LaMoille is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village of LaMoille to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

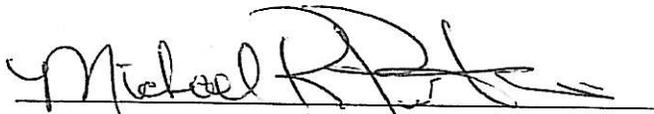
WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board of the Village of LaMoille hereby approves that the Village participates in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular Village Board Meeting, held on the 23rd day of September 2008.


_____, Mayor

ATTEST: 
_____, Village Clerk

STATE OF ILLINOIS)
)
COUNTY OF BUREAU) SS.

I, the undersigned, do hereby certify that I am the duly qualified and acting Clerk of the City of Princeton, in the County and State aforesaid, and as such Clerk I am the keeper of the records and files of the Mayor and City Council of the City.

I do further certify that the attached and foregoing is a true and correct copy of Resolution No. R-8-06-5-1 entitled:

RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT OF A FEMA
APPROVED NATURAL HAZARDS MITIGATION PLAN

as adopted by the Mayor and City Council of the said City of Princeton at its regular meeting held on Monday, May 1, 2006, and as approved by the Mayor of said City on the 1st day of May, 2006, all as it appears from the official records of said City in my care and custody.

IN WITNESS WHEREOF, I have hereunto affixed my official signature and the corporate seal of said City of Princeton, Illinois this 8th day of September, 2006.


Clyde Wray, City Clerk

{SEAL}

RESOLUTION NO. 06-0213

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of Seatonville is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village/City/County of Seatonville to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED THAT the Village Board/City Council/ County Board of the Village/City/County of Seatonville hereby approves that the Village/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/Village Board/ County Board Meeting, held on the 13th day of February 2006.


2-13-06, Mayor

ATTEST: 
2-13-06, Village/County Clerk

Resolution No. 560

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the City of Spring Valley is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the City of Spring Valley to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

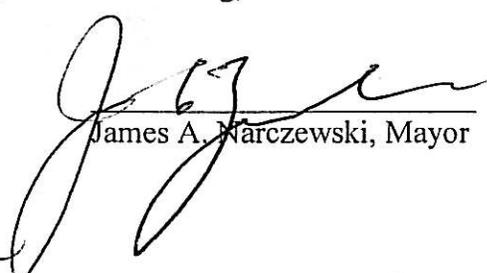
WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional National Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigations Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the City of Spring Valley hereby approves that the City participate in the development of FEMA approved Natural Hazards Mitigation Plan. The City will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council Meeting, held on the third day of April, 2006.


James A. Marczewski, Mayor

ATTEST 
Rebecca L. Hansen, City Clerk

VILLAGE OF TISKILWA
Tiskilwa, Illinois 61368

Randy Philhower
Village President

Kathryn Gorman
Village Clerk

Resolution No. 05-09-06

A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the Village of Tiskilwa, Illinois is desirous of completing a FEMA approved Natural Hazards Mitigation Plan, and

WHEREAS, LaSalle County, Illinois has invited the Village of Tiskilwa to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Natural Hazards Mitigation Act of 2000 requires every State, County, and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, LaSalle County and the North Central Council of Governments have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no cash contributions are necessary to participate, and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plan, and

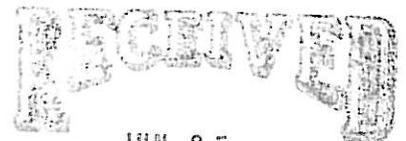
WHEREAS, the North Central Council of Governments has been hired by LaSalle County, and is willing and capable of developing a Regional Natural Hazards Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED THAT the Village Board of Tiskilwa, Illinois, hereby approves that the Village participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular Village Board Meeting, held on the 9th day of May, 2006.

Charles R. Philhower
Charles R. Philhower, Village President

ATTEST: Kathryn Gorman
Kathryn Gorman, Village Clerk



JUN 05

NORTH CENTRAL COUNCIL

RESOLUTION NO. 05-15-06

**RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village of Walnut is desirous of completing a FEMA approved Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County, Illinois has invited the Village of Walnut to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

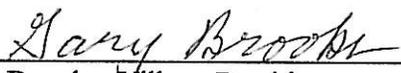
WHEREAS, Bureau County and the North Central Illinois Council of Governments have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate, and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board of the Village of Walnut hereby approves that the Village participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village will have at least one representative participate in at least three (3) meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular Village Board meeting held on the 15th day of May, 2006.



Gary Brooks, Village President

ATTEST: 

Lori Wilkinson, Village Clerk

RESOLUTION NO. 090208A

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the City of Wenona is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the City of Wenona to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Wenona hereby approves that the City participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The City will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council Meeting, held on the 2 day of September 2008.

James Kupiec
_____, Mayor

ATTEST: Do Ellen White
Wenona, City Clerk

RESOLUTION NO. 07-10

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the County of Marshall is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the County of Marshall to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

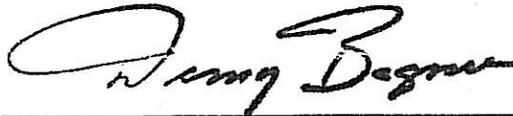
WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

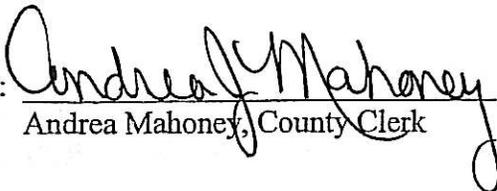
WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the County Board of the County of Marshall hereby approves that the County participates in the development of a FEMA approved Natural Hazards Mitigation Plan. The County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular County Board Meeting, held on the 4th day of January 2007.



Dennis Bogner, Chairman

ATTEST: 
Andrea Mahoney, County Clerk

RESOLUTION NO. 02-12

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of Henry is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village (City) County of Henry to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board (City Council) County Board of the Village (City) County of Henry hereby approves that the Village (City) County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village (City) County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 18 day of August 2008.

Daryl Fountain
_____, Mayor

ATTEST: Jean Giddens
_____, Village (City) County Clerk

Resolution No. 2006-14

A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the city of Lacon is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and;

WHEREAS, Bureau County, Illinois has invited the City of Lacon to participate in their development of a regional Natural Hazards Mitigation Plan, and;

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County, and Municipality to have a Natural Hazards Mitigation Plan, and;

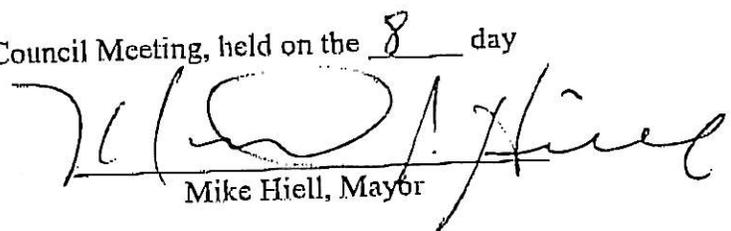
WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate, and;

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and;

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Lacon hereby approves that the City participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The City will have at least one representative participate in at least three meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council Meeting, held on the 8 day of May, 2006.


Mike Hiell, Mayor

ATTEST: Melody A Weber
Melody A Weber - City Clerk

RESOLUTION NO. 2006-2

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village of Sparland is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village of Sparland to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board of the Village of Sparland hereby approves that the Village participates in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular Village Board Meeting, held on the 1st day of June 2006.

Joseph L. Murphy
Sparland, Mayor

ATTEST: Galene L. Smith
Sparland, Village Clerk

RESOLUTION NO. _____

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of Toluca is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village/City/County of Toluca to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

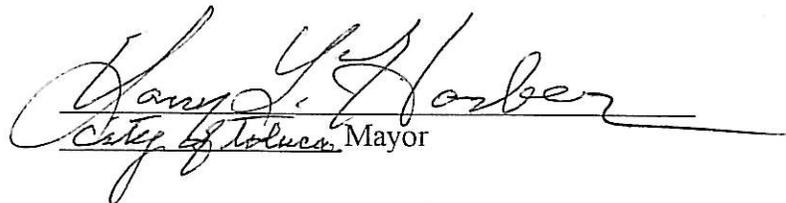
WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

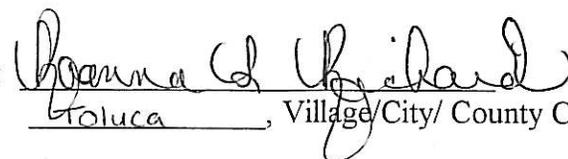
WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council/ County Board of the Village/City/County of Toluca hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 12th day of June 2006.


City of Toluca Mayor

ATTEST: 
Toluca, Village/City/ County Clerk



JUN 26

NORTH CENTRAL COUNCIL

2006-91175

03/15/2006 1:24 PM

RESOLUTION NO. 2006-91175

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the County of Stark is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Stark County, Illinois has invited the County of Stark to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every County to have a Natural Hazards Mitigation Plan, and

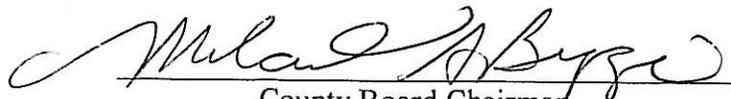
WHEREAS, Stark County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Stark County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the County Board of the County of Stark hereby approves that the County of Stark participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The County of Stark will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular County Board meeting, held on the 14th day of March, 2006.


County Board Chairman

ATTEST: 
Stark County Clerk

RESOLUTION NO. #05/06-14

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the ~~Village/City/County~~ of Bradford is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, LaSalle County, Illinois has invited the ~~Village/City/County~~ of Bradford to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, LaSalle County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

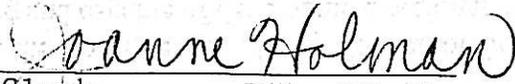
WHEREAS, the North Central Illinois Council of Governments has been hired by LaSalle County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ ~~City Council~~ of the ~~Village/City/County~~ of Bradford hereby approves that the ~~Village/City/County~~ participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The ~~Village/City/County~~ will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular ~~City Council/ Village Board/ County Board~~ Meeting, held on the 3rd day of APRIL 2006.



President, Mayor

ATTEST: 

Clerk, ~~Village/City/County~~ Clerk

RESOLUTION NO. 2-6-2B

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of _____ is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, Bureau County, Illinois has invited the Village/City/County of _____ to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, Bureau County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by Bureau County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council/ County Board of the Village/City/County of _____ hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 6th day of Feb, 2006.

Dean Rosebrake
_____, Mayor

ATTEST: Caryl J. Schen
_____, Village/City/ County Clerk

LAFAYETTE

RESOLUTION NO. R-9271-06-03-13

**A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT
OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN**

WHEREAS, the Village/City/County of Toulon is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, LaSalle County, Illinois has invited the Village/City/County of Toulon to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

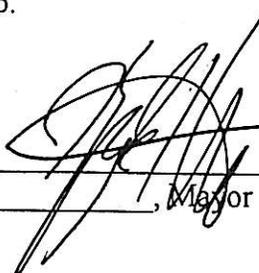
WHEREAS, LaSalle County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by LaSalle County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council of the Village/City/County of Toulon hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council/ Village Board/ County Board Meeting, held on the 13th day of March 2006.



_____, Mayor

ATTEST:

Sandra Langdon, Village/City/County Clerk

05/06 -

RESOLUTION NO. 19

A RESOLUTION FOR PARTICIPATION IN THE DEVELOPMENT OF A FEMA APPROVED NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the Village/City/County of Weymouth is desirous of completing a FEMA approved Natural Hazards Mitigation Plan and

WHEREAS, LaSalle County, Illinois has invited the Village/City/County of Weymouth to participate in their development of a regional Natural Hazards Mitigation Plan, and

WHEREAS, the Hazard Mitigation Act of 2000 requires every State, County and Municipality to have a Natural Hazards Mitigation Plan, and

WHEREAS, LaSalle County and the North Central Illinois Council of Government have received grant funds for the development of a regional Natural Hazards Mitigation Plan, and no local cash contributions are necessary to participate and

WHEREAS, FEMA recommends the development of regional Natural Hazards Mitigation Plans, and

WHEREAS, the North Central Illinois Council of Governments has been hired by LaSalle County and is willing and capable of developing a regional Natural Hazards Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED THAT the Village Board/ City Council of the Village/City/County of Weymouth hereby approves that the Village/City/County participate in the development of a FEMA approved Natural Hazards Mitigation Plan. The Village/City/County will have at least one representative participate in at least 3 meetings during the development of the Natural Hazards Mitigation Plan.

PASSED and APPROVED at its regular City Council Village Board/ County Board Meeting, held on the 10th day of April 2006.

James J. Pepper
City of Weymouth Mayor

ATTEST: Ludie M. Lee
Weymouth, Village/City/ County Clerk

Sign In Sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 February 27, 2006

Name	Title	Organization	Address	Phone	E-mail address
Les Grant	director response coordinator	Bureau Co. Health Dept.	526 Bureau rd by Hwy	875-5091	lgrant@bchealthdepartment.org
Chad Errio	Village Trustee	Village of Sebouville	Center St. Sebouville IL	---	sebouvillefiretraining@yahoo.com
JEFF SUTHER	ENGINEER	CHAMULU ASSOC.	PERU, IL. 61354 307 FIFTH ST.	223-3344	JEFFS@CHAMULU.COM

Sign In sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 February 27, 2006

Name	Title	Organization	Address	Phone	E-mail address
Fred Lambert	C.S. Dept. Coord.	Stark Co.	RR2, Box 133 Toulon, MO 64683	417-309-2865 309-525-5302	fred.lambert@main1.net
RANDY PHILHOOPER	VILLAGE PRESIDENT	TISKILWA	PO Box 12 Tiskilwa, IL 61368	815-646-4481	
Alyssa Pollock	Disaster Preparedness Coordinator	American Red Cross Central IL Chapter	311 W. John A. Gwynn Jr. Ave. Peoria, IL 61605	309-677-7872 x210	apollock@redcrossillinois.org

Sign In sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 February 27, 2006

Name	Title	Organization	Address	Phone	E-mail address
Kristine Donarski	Zoning Officer / ESDA Coordinator	Bureau County	Room B-5 Courthouse 700 S. Main St Princeton, IL 61856	(815) 875-2077	bcesda7@yahoo.com
MEUX LINDENHART		NCICG			
JOHN OLIPHANT		NCICG			
BEW WILSON		NCICG			

Sign in Sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 April 25, 2006

Name	Title	Organization	Address	Phone	E-mail address
Pete Nelson	Planning + Zoning Administrator	City of Princeton	2 S. Main St.	815-879-3381	pnelson@princeton-il.com
Kristine Domarska	Zoning officer ESDA Coord.	Bureau County	Room B-5, Courthouse 700 S. Main St. Princeton IL 61350	875-2077	beesda1@yahoo.com
Faye Soma	ESDA Coord	Stark Co	Rt 2, Rt 4133 Tuba	309 286 5302	mdundell@maind.net
Steve Hansard	Wyoming City Councilman	Wyoming	301 E. Smith St Wyoming Ill. 61491	(309) 695-2301	

MJD
2/20/06

MJD

B/m/s

Sign In Sheet
~~Putnam~~ County Natural Hazards Mitigation Plan
 January 4~~th~~, 2007

Name	Title	Organization	Address	Phone	E-mail address
B Wilson	COMM DEVELOP COORD. COORD.	NCICG	110 N MAIN	815/875/3396	BWilson@ncicg.org
Randy Philhower	MAYOR	Village of TISKIWA	226 W. MAIN TISKIWA	815/646/4481	
KEVIN LINDEMAN	SENIOR PLANNER	NCICG	110 N MAIN	815/875-3396	klindema@ncicg.org
PETE NELSON					
KRIS DOMANSKI					
? KEVIN DAVIS	SHERIFF	Putnam Co.			

Sign In Sheet
Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
February 27, 2007

Name	Title	Organization	Address	Phone	E-mail address
KAREN LINDEMAN	SENIOR PLANNER	NCICG	110 N MAIN PRINCETON IL	815/875-3396	klindeman@ncicg.org
William Rosenow	Mayor	Sheffield	Box 218 Sheffield	815 454 2034	
Randy Philhower	Mayor	TISKILWA	226 W. Main Tiskilwa, IL	815-646-4461	
Timothy SHIPP	MAYOR	Bureau	P.O. Box 140 Bureau 61315	815-659-3341	
GLENN MOOREY	MAYOR	MINERAL	P.O. Box 207 MINERAL, 61344	309-283-5224	
Pete Nelson	Planning & Zoning Administrator	City of Princeton	2 S. Main St. Princeton, IL	815-879-3381	pnelson@princeton-il.com
JOHN GORDON	MAYOR	VILLAGE	116 WYANE	815 694-8512	
Steve Sondgeroth	Village Trustee	LaMoille		815/866/3905	
Kristine Donaristi	Zoning Officer	Bureau County	Room B-5, Courthouse 700 S. Main St. Princeton IL 61356	815-875-2077	bcesda1@yahoo.com

PAUL OSWORN
 not

Sign In Sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 March 29, 2007

Name	Title	Organization	Address	Phone	E-mail address
DARY FOUNTAIN	MAYOR	City of Henry	406 E. Park Row	364-3056	dfountain@hotmail.com
Free Lentz	ESDA Coord	Stark Co.	RR2, Box 433 Toulon, OH 44783	309-286 5302	mlentz@stark.net
GLENN MOREY	MAYOR	VILLAGE MINERAL	P.O. Box 207 MINERAL, OH 46134	309-488 5221	
William Rosenow	MAYOR	Village of Sheffield	Box 218	815 454 2034	
Steve Sondgeroth	Village Trustee	City of LaMoille	101 Canal St LaMoille, OH 43130	815 866 3905	SKSfarms@hotmail.com
Randy Thillhouse	Mayor	Village Tiskibos			
Pete Nelson	Zoning Administrator	City of Princeton	2 S. Main St.	815-879-3381	pnelson@princeton-oh.com

Sign In Sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 March 29, 2007

Name	Title	Organization	Address	Phone	E-mail address
Kristine Donarski	Zoning officer & ESDA Coord.	Bureau County	Room B-5 Courthouse 700 S. Main St. Princeton IL 61356	(815) 875-2077	beesda.I@yahoo.com

Sign In Sheet
 Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
 April 26, 2007

Name	Title	Organization	Address	Phone	E-mail address
Kristine Donawski	ESDA Coordinator	Bureau County ESDA	Room B-5 Counthouse 700 S. Main St. Princeton IL 61356	(815) 875-2077	beesda1@yahoo.com
Randy H. Throver	Mayor	Village of TISKILWA	PO Box 12 TISKILWA, IL		
Jimm Lykins	ESDA Coordinator	City of Henry	414 Richard Henry IL	309-364-2833	Snicky11950 Verizon.NET

Sign In Sheet
Bureau/Marshall/Stark County Natural Hazards Mitigation Plan
November 29, 2007

Name	Title	Organization	Address	Phone	E-mail address
Christine Danarski	Zoning Officer / ESDA Coord	Bureau County	Room B-5, Courthouse 700 S. Main St. Princeton IL 61356	(815) 875-2077	bcesda1@yahoo.com
Fred [unclear]	ESDA COORD	Stark County	ARR, Box 133 Toulon, IL 61483	309 286 5302	indiacell@arr.net
X Bob Myer	Village Trustee	Hennepin	P.O. Box 346 Hennepin 61327	815, 925 7431	bobpatm@ ivnet.com
X Jim GODASICH	EMA COORDINATOR	POTIAMI COUNTY	236 N. ALBERT AVE McNABSB, IL 61335	815-882- 2460	JMGOLD@MABSB.IL.COM
Gayle Smith	Reporter	Journal Star	123 WILBERN RD WASHBURY IL 61570	309 248 7804	glsmt@ jstlink.com
Peter Nelson	City of Princeton Planning + zoning Administrator	City of Princeton	2 S. Main St. Princeton, IL 61356	815-879-3381	pnelson@princeton-il.com

Sign In Sheet
 Bureau County, Marshall County, Stark County Natural Hazards Mitigation Plan
 Thursday, August 28, 2008 - 6:30pm

Name	Title	Organization	Address	Phone	E-mail address
BENJAMIN WILSON	COMMUNITY DEVELOPMENT COORDINATOR	NCTCS	116 N MAZU	(815) 815-3396	BWILSON@NCTCS.ORG
Kristine Donarski	ESDA Coordinator	Bureau County	Room B-5, Courthouse 700 S. Main St. Princeton IL 61356	(815) 815-2077	bcesda1@yahoo.com
William ROSENOW	MAYOR	Sheffield	121 So Church St Box 218 Sheffield, IL 61361	815-454-2034	William.Rosenow@Notamtl.com
Fred Stamm	ESDA Coord	Stark County	RR2, Box 133 Toulon, IL 61483	309 286-5302	AndrewCreek@Maine10.net
Stephen Piasse	ESDA Coordinator	City of Toluca	520 N Linden St Toluca, IL 61369	815 4522241	
Dave Dollinger	Supt. of Public Works Asst. Fire Chief	CITY OF TOLOCA	423 P. CEDAR ST. TOLOCA IL 61369	815-257-2101	CITY HALL @ MAXXIS .COM.
Carl Pave	Mayor	Village La Fayette	Box 112 La Fayette, IL	309 995-3585	Box 186 La Fayette, IL 61449
ERIC C. BRYANT	VILLAGE TRUSTEE	VILLAGE OF DEER	Box 1068	815-228-1320	ebryant13@hotmail.com

Sign In Sheet
 Bureau County, Marshall County, Stark County Natural Hazards Mitigation Plan
 Thursday, August 28, 2008 - 6:30pm

Name	Title	Organization	Address	Phone	E-mail address
Randy Philhower	Village Pres.	Village of Tiskilwa	PO Box 433 Tiskilwa, IL 61368	815 646 4481	
Zach Pym	Village Trustee	Village of Seatonville	206 E. 2nd Seatonville, IL 61359	815 894- 3597	Zach Pym@yahoo.com
Chad Ennis	Village Trustee & Training Officer S.F.D.	Village of Seatonville	110 N Center St Seatonville, IL 61359	815-303- 9425	seatonvillefiretraining@yahoo.com
Suzanne Miske	Comm. Planner	NGLG			
Pete Nelson		City of Princeton			

**Natural Hazards Mitigation Plan Public Meeting
Bureau County Courthouse
September 25, 2008
6:30pm**

Name	Organization	Address/email
Suzanne Miske	NCICG	smiske@ncicg.org
- Bob Witten	Village of Seatonville	
Ann Hartz	Village of Seatonville	
Lindsay Welbers	News Tribune	lindsay.welbers@gmail.com
- Kristine Donarski	Bureau County	bcesda1@yahoo.com
- Diane Dollinger	City of Toluca	City Hall @ maxis maxis.com
- Stephen Plass	City of Toluca ESDA 520N Linden, Toluca, IL 61369	
- ERIC C. BRYANT	Village of DEPUE	ebryant13@hotmail.com
- Leo Lopez	Village of La Moille	Leo Lopez @ cil.net
- Fred Seem	Stark County	indiancreek@main1.net
- Pete Nelson	City of Princeton	pnelson@princeton-il.com
- Randy Philhower	Village of Tisdale	PO Box 433 - Tisdale, IL

North Central Illinois Council of Government

Serving the Communities of North Central Illinois

110 North Main * Princeton, Illinois 61356 * Phone 815/875-3396 * Fax 815/875-3397

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Natural Hazard Mitigation Plan for Bureau, Marshall and Stark Counties

Natural Hazard Mitigation Plan for Bureau, Marshall and Stark Counties commented on by FEMA

The Natural Hazard Mitigation Plan (NHMP) for Bureau, Marshall and Stark Counties has been completed and submitted to FEMA for their review and approval. Municipalities in the three counties were asked to participate in the plan. Comments have been received back from FEMA and required changes and information are being added to the plan. The NHMP is available for download by clicking on the link below.

[Click here for Bureau, Marshall and Stark County Natural Hazard Mitigation Plan](#)

Public Meeting being held for Bureau, Marshall and Stark County Natural Hazards Mitigation Plan - Thursday, September 25, 2008 at 6:30pm

What are the natural hazards that are likely to occur in Bureau, Marshall, and Stark Counties? They are floods, tornadoes, winter/ice storms, thunderstorms, hail, and extreme temperatures! The hazard events, protection measures, and community action items are all portions

of the Natural Hazards Mitigation Plan. **The DRAFT plan will be discussed at the next Bureau County, Marshall County and Stark County Natural Hazards Mitigation Plan meeting being held Thursday, September 25, 2008 at 6:30pm.** The meeting is being held at Bureau County Courthouse, 700 S. Main St., Princeton, 61356. This Natural Hazards Mitigation Plan covers the Bureau County, Marshall County, and Stark County area and the municipalities in the two counties that wanted to participate. The communities have been invited to participate and were asked to pass a participation resolution if they were going to be involved in the development of the plan. If a community participates in the process they will have a FEMA approved Natural Hazards Mitigation Plan at no cost to them upon the completion of the plan.

This meeting is open to the public and any person or organization that is interested in participating in the discussion of the DRAFT Natural Hazards Mitigation Plan are encouraged and invited to attend. For more information contact Suzanne Miske at (815) 875-3396.

Bureau County Thunderstorms 01/01/1950 - 02/28/2008

Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
9/8/1960	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
9/8/1960	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
8/6/1972	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/4/1974	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/20/1974	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/22/1974	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
4/18/1975	Thunderstorm Winds	52 kts.	0	0	0	0	Countywide
6/14/1975	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
7/8/1975	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/30/1977	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
9/17/1978	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
7/5/1980	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
7/5/1980	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
8/9/1980	Thunderstorm Winds	56 kts.	0	0	0	0	Countywide
8/10/1980	Thunderstorm Winds	56 kts.	0	0	0	0	Countywide
12/27/1982	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/6/1983	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
8/27/1983	Thunderstorm Winds	53 kts.	0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	70 kts.	0	0	0	0	Countywide
7/29/1987	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
5/8/1988	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
5/31/1991	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/17/1992	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/17/1992	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
4/15/1994	Thunderstorm Winds	0 kts.	0	0	5K	0	La Moille
7/7/1994	Thunderstorm Winds	0 kts.	0	0	0	0	Princeton
7/17/1996	Thunderstorm Winds	52 kts.	0	0	0	0	La Moille
10/29/1996	High Wind	52 kts.	0	0	0	0	Countywide
4/5/1997	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
4/6/1997	High Wind	54 kts.	0	0	1.6M	0	Countywide
4/30/1997	Thunderstorm Winds	61 kts.	0	0	0	0	Princeton
4/30/1997	Thunderstorm Winds	60 kts.	0	0	20K	0	Milo
4/30/1997	High Wind	52 kts.	0	0	6K	0	Countywide
5/24/1997	Thunderstorm Winds	50 kts.	0	0	0	0	Mineral
9/29/1997	High Wind	52 kts.	0	1	15K	0	Countywide
3/27/1998	Thunderstorm Winds	57 kts.	0	0	0	0	Princeton
3/27/1998	Thunderstorm Winds	52 kts.	0	0	0	0	Mineral
3/27/1998	Thunderstorm Winds	55 kts.	0	0	0	0	Wyanet
6/28/1998	Thunderstorm Winds	0 kts.	0	0	0	1K	Wyanet
6/28/1998	Thunderstorm Winds	0 kts.	0	0	2K	0	Princeton
6/29/1998	Thunderstorm Winds	70 kts.	0	0	0	0	Countywide
9/6/1998	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
11/9/1998	High Wind	57 kts.	0	0	0	0	Countywide
5/17/1999	Thunderstorm Winds	71 kts.	0	0	20K	0	Princeton

6/4/1999	Thunderstorm Winds	56 kts.	0	0	0	0	Wyanet
8/23/1999	Thunderstorm Winds	52 kts.	0	0	0	0	Depue
5/18/2000	Thunderstorm Winds	0 kts.	0	0	30K	0	Princeton
5/31/2000	Thunderstorm Winds	0 kts.	0	0	5K	0	Buda
5/31/2000	Thunderstorm Winds	0 kts.	0	0	1K	0	Manlius
5/31/2000	Thunderstorm Winds	0 kts.	0	0	1K	0	Princeton
5/31/2000	Thunderstorm Winds	0 kts.	0	0	1K	0	Walnut
9/11/2000	Thunderstorm Winds	52 kts.	0	0	0	0	Dover
9/11/2000	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
9/11/2000	Thunderstorm Winds	52 kts.	0	0	0	0	Bureau
10/3/2000	Thunderstorm Winds	0 kts.	0	0	0	200K	La Moille
10/3/2000	Thunderstorm Winds	61 kts.	0	0	25K	0	Bureau
10/3/2000	Thunderstorm Winds	61 kts.	0	0	0	0	Princeton
2/25/2001	High Wind	50 kts.	0	0	0	0	Countywide
4/23/2001	Gradient Wind	N/A	0	0	0	0	Countywide
5/20/2001	Thunderstorm Winds	0 kts.	0	0	50K	0	Mineral
6/14/2001	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
6/14/2001	Thunderstorm Winds	52 kts.	0	0	0	0	Walnut
6/14/2001	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
7/8/2001	Thunderstorm Winds	52 kts.	0	0	0	0	Manlius
6/11/2002	Thunderstorm Winds	52 kts.	0	0	0	0	Tiskilwa
6/25/2002	Thunderstorm Winds	57 kts.	0	0	0	0	Neponset
2/11/2003	High Wind	64 kts.	0	0	0	0	Countywide
4/30/2003	Thunderstorm Winds	61 kts.	0	0	150K	0	Providence
5/10/2003	Thunderstorm Winds	60 kts.	0	0	500K	0	Countywide
5/10/2003	Thunderstorm Winds	60 kts.	0	0	250K	0	Ohio
5/11/2003	High Wind	42 kts.	0	0	250K	0	Countywide
5/14/2003	Heavy Rain	0	0	0	100K	0	Princeton
7/27/2003	Thunderstorm Winds	55 kts.	0	0	40K	20K	Countywide
11/12/2003	High Wind	54 kts.	0	0	100K	0	Countywide
3/5/2004	High Wind	54 kts.	0	0	5K	0	Countywide
5/9/2004	Thunderstorm Winds	57 kts.	0	0	2K	10K	Ohio
5/10/2004	Thunderstorm Winds	52 kts.	0	0	2K	5K	La Moille
5/30/2004	Thunderstorm Winds	52 kts.	0	0	5K	0	Princeton
7/13/2004	Thunderstorm Winds	61 kts.	0	0	75K	25K	Van Orin
5/11/2005	Thunderstorm Winds	61 kts.	0	0	10K	0	Spring Valley
6/4/2005	Thunderstorm Winds	52 kts.	0	0	2K	0	Depue
6/8/2005	Thunderstorm Winds	50 kts.	0	0	0	0	Tiskilwa
6/9/2005	Thunderstorm Winds	57 kts.	0	0	1K	2K	Providence
9/22/2005	Thunderstorm Winds	52 kts.	0	0	50K	0	Princeton
3/12/2006	Thunderstorm Winds	57 kts.	0	0	3K	0	Walnut
3/12/2006	Thunderstorm Winds	61 kts.	0	0	1K	0	Walnut
3/12/2006	Thunderstorm Winds	57 kts.	0	0	2K	0	Princeton
5/29/2006	Thunderstorm Winds	52 kts.	0	0	1K	0	Spring Valley
6/24/2006	Heavy Rain	0	0	0	0	0	Bureau
7/19/2006	Thunderstorm Winds	57 kts.	0	0	10K	0	Sheffield
7/19/2006	Thunderstorm Winds	57 kts.	0	0	2K	0	Walnut

7/19/2006	Thunderstorm Winds	57 kts.	0	0	5K	0	Princeton
7/19/2006	Thunderstorm Winds	57 kts.	0	0	2K	0	Dover
8/10/2006	Heavy Rain	0	0	0	0	0	Princeton
10/2/2006	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
3/31/2007	Thunderstorm Winds	52 kts.	0	0	0	0	Tiskilwa
6/21/2007	Thunderstorm Winds	56 kts.	0	0	1K	0	Neponset
8/23/2007	Thunderstorm Winds	52 kts.	0	0	0	0	Buda
8/23/2007	Thunderstorm Winds	52 kts.	0	0	0	0	Princeton
Events: 99		Total:	0	2	3.349M	263K	

Marshall County Thunderstorms 01/01/1950 - 02/28/08

Date	Type	Magnitu de	Deaths	Injuries	Property Damage	Crop Damage	
6/10/1968	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/25/1969	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/20/1974	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
7/10/1974	Thunderstorm Winds	52 kts.	0	0	0	0	Countywide
4/23/1975	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/14/1975	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/4/1976	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/4/1976	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/29/1976	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
8/18/1979	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
4/3/1981	Thunderstorm Winds	59 kts.	0	0	0	0	Countywide
4/13/1981	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
4/13/1981	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
7/6/1982	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
9/11/1983	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
5/14/1985	Thunderstorm Winds	87 kts.	0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	57 kts.	0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
4/5/1988	Thunderstorm Winds	61 kts.	0	0	0	0	Countywide
5/8/1988	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
11/27/1990	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/13/1991	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
6/17/1992	Thunderstorm Winds	0 kts.	0	0	0	0	Countywide
3/25/1996	High Wind	0 kts.	1	0	0	0	Countywide
5/9/1996	Thunderstorm Winds	0 kts.	0	0	0	0	Varna
7/24/1996	Thunderstorm Winds	0 kts.	0	0	0	0	Lacon
10/30/1996	High Wind	56 kts.	0	0	0	0	Countywide
4/5/1997	Thunderstorm Winds	0 kts.	0	0	0	0	La Rose
4/6/1997	High Wind	56 kts.	0	0	0	0	Countywide
4/30/1997	High Wind	61 kts.	0	1	38K	0	Countywide
8/4/1997	Thunderstorm Winds	0 kts.	0	0	0	0	Varna
9/29/1997	High Wind	55 kts.	0	0	0	0	Countywide
3/27/1998	Thunderstorm Winds	0 kts.	0	0	0	0	Sparland
5/19/1998	Thunderstorm Winds	52 kts.	0	0	0	0	Lacon

APPENDIX H

6/14/1998	Thunderstorm Winds	0 kts.	0	0	0	0	Sparland
6/18/1998	Thunderstorm Winds	0 kts.	0	0	0	0	Sparland
6/28/1998	Thunderstorm Winds	0 kts.	0	0	0	0	Henry
6/29/1998	Thunderstorm Winds	0 kts.	0	0	250K	0	Countywide
11/10/1998	High Wind	57 kts.	0	1	60K	0	Countywide
6/11/1999	Thunderstorm Winds	0 kts.	0	0	0	0	Varna
4/20/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Wenona
5/8/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Pattonsburg
5/18/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Toluca
6/13/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Wilbern
6/23/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Lacon
8/6/2000	Thunderstorm Winds	52 kts.	0	1	0	0	Henry
10/3/2000	Thunderstorm Winds	0 kts.	0	0	0	0	Toluca
6/14/2001	Thunderstorm Winds	50 kts.	0	0	0	0	Camp Grove
7/8/2001	Thunderstorm Winds	52 kts.	0	0	0	0	Henry
7/21/2001	Thunderstorm Winds	54 kts.	0	0	0	0	Henry
3/9/2002	High Wind	76 kts.	0	2	0	0	Countywide
6/4/2002	Thunderstorm Winds	50 kts.	0	0	0	0	Henry
6/25/2002	Thunderstorm Winds	50 kts.	0	0	0	0	Lacon
2/11/2003	Thunderstorm Winds	50 kts.	0	0	0	0	Wenona
4/30/2003	Thunderstorm Winds	50 kts.	0	0	0	0	Henry
5/30/2003	Thunderstorm Winds	60 kts.	0	0	0	0	La Rose
7/15/2003	Thunderstorm Winds	55 kts.	0	0	0	0	Lacon
7/21/2003	Thunderstorm Winds	55 kts.	0	0	0	0	Lacon
11/12/2003	High Wind	42 kts.	0	0	0	0	Countywide
5/7/2004	Thunderstorm Winds	61 kts.	0	0	0	0	Lacon
7/9/2004	Thunderstorm Winds	50 kts.	0	0	0	0	Henry
8/17/2004	Thunderstorm Winds	50 kts.	0	0	0	0	Varna
10/29/2004	Thunderstorm Winds	52 kts.	0	0	0	0	Lacon
6/4/2005	Thunderstorm Winds	60 kts.	0	0	0	0	Sparland
6/4/2005	Thunderstorm Winds	60 kts.	0	0	0	0	Lacon
6/8/2005	Thunderstorm Winds	50 kts.	0	0	0	0	Sparland
4/13/2006	Thunderstorm Winds	52 kts.	0	0	0	0	Sparland
4/13/2006	Thunderstorm Winds	58 kts.	0	0	0	0	Toluca
5/24/2006	Thunderstorm Winds	52 kts.	0	0	0	0	Lacon
7/19/2006	Thunderstorm Winds	52 kts.	0	0	0	0	Sparland
10/2/2006	Thunderstorm Winds	52 kts.	0	0	5K	0	Henry
8/23/2007	Thunderstorm Winds	61 kts.	0	0	25K	0	Camp Grove
8/23/2007	Thunderstorm Winds	50 kts.	0	0	0	0	Henry
8/23/2007	Thunderstorm Winds	50 kts.	0	0	0	0	Camp Grove
Events: 74		Totals:	1	5	378K	0	

Stark County Thunderstorms 01/01/1950 - 02/28/2008

Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
6/25/1969	Thunderstorm Winds	51 kts	0	0	0	0	Countywide
6/20/1974	Thunderstorm Winds		0	0	0	0	Countywide
6/22/1974	Thunderstorm Winds		0	0	0	0	Countywide
4/18/1975	Thunderstorm Winds	52 kts	0	0	0	0	Countywide
3/4/1976	Thunderstorm Winds		0	0	0	0	Countywide
8/18/1979	Thunderstorm Winds		0	0	0	0	Countywide
7/20/1980	Thunderstorm Winds	61 kts	0	0	0	0	Countywide
4/3/1981	Thunderstorm Winds		0	0	0	0	Countywide
6/8/1981	Thunderstorm Winds		0	0	0	0	Countywide
7/6/1982	Thunderstorm Winds		0	0	0	0	Countywide
7/6/1982	Thunderstorm Winds		0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	70 kts	0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	52 kts	0	0	0	0	Countywide
5/21/1987	Thunderstorm Winds	52 kts	0	0	0	0	Countywide
5/8/1988	Thunderstorm Winds		0	0	0	0	Countywide
8/2/1991	Thunderstorm Winds		0	0	0	0	Countywide
3/25/1996	High Wind		1	0	0	0	Countywide
6/13/1996	Thunderstorm Winds		0	0	0	0	La Fayette
10/29/1996	Thunderstorm Winds	56 kts	0	0	0	0	La Fayette
10/30/1996	High Wind	56 kts	0	0	0	0	Countywide
4/5/1997	Thunderstorm Winds		0	0	0	0	Toulon
4/6/1997	High Wind	56 kts	0	0	0	0	Countywide
4/30/1997	High Wind	61 kts	0	1	38K	0	Countywide
8/3/1997	Thunderstorm Winds		0	0	0	0	La Fayette
8/16/1997	Thunderstorm Winds	52 kts	0	0	0	0	Toulon
9/29/1997	High Wind	55 kts	0	0	0	0	Countywide
3/27/1998	Thunderstorm Winds		0	0	0	0	Wyoming
6/29/1998	Thunderstorm Winds	57 kts	0	1	0	0	Countywide
11/10/1998	High Wind	57 kts	0	1	60K	0	Countywide
6/4/1999	Thunderstorm Winds		0	0	0	0	Osceola
7/28/1999	Thunderstorm Winds	52 kts	0	0	0	0	Toulon
8/6/2000	Thunderstorm Winds		0	0	0	0	West Jersey
9/11/2000	Thunderstorm Winds	52 kts	0	0	0	0	Wyoming
9/22/2000	Thunderstorm Winds		0	0	0	0	Toulon
10/3/2000	Thunderstorm Winds	52 kts	0	0	0	0	Wyoming
4/5/2001	Thunderstorm Winds	50 kts	0	0	0	0	Wyoming
6/14/2001	Thunderstorm Winds	50 kts	0	0	0	0	Wyoming
7/8/2001	Thunderstorm Winds	56 kts	0	0	0	0	Bradford
6/4/2002	Thunderstorm Winds	50 kts	0	0	0	0	Toulon
6/25/2002	Thunderstorm Winds	50 kts	0	0	0	0	Bradford
7/21/2003	Thunderstorm Winds	60 kts	0	0	0	0	Countywide
11/12/2003	High Wind	42 kts	0	0	0	0	Countywide
5/7/2004	Thunderstorm Winds	61 kts	0	0	0	0	La Fayette
5/30/2004	Thunderstorm Winds	50 kts	0	0	0	0	Duncan

5/30/2004	Thunderstorm Winds	50 kts	0	0	0	0	Bradford
8/17/2004	Thunderstorm Winds	52 kts	0	0	0	0	Toulon
6/4/2005	Thunderstorm Winds	50 kts	0	0	0	0	West Jersey
6/4/2005	Thunderstorm Winds	50 kts	0	0	0	0	Bradford
6/4/2005	Thunderstorm Winds	50 kts	0	0	0	0	Wyoming
4/13/2006	Thunderstorm Winds	58 kts	0	0	0	0	Toulon
7/19/2006	Thunderstorm Winds	52 kts	0	0	0	0	Toulon
8/23/2007	Thunderstorm Winds	61 kts	0	0	35K	0	West Jersey
8/23/2007	Thunderstorm Winds	50 kts	0	0	0	0	Bradford
8/23/2007	Thunderstorm Winds	53 kts	0	0	15K	0	Toulon
Events: 54		Total:	1	3	148K	0	

Bureau County Lightning 01/01/1050 - 02/28/2008

Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
9/27/1999	Lightning	0	0	0	15K	0	Depue
10/3/2000	Lightning	0	0	0	0	0	Bureau
7/8/2003	Lightning	0	0	0	70K	0	Princeton
8/3/2006	Lightning	0	0	0	1K	0	Princeton
	Total:	0	0	0	86K	0K	

Bureau County Hail 01/01/1950 - 02/28/2008

Date	Size	Deaths	Injuries	Property Damage	Crop Damage	
8/6/1972	1.50 in.	0	0	0	0	Countywide
6/14/1974	0.75 in.	0	0	0	0	Countywide
7/26/1978	1.00 in.	0	0	0	0	Countywide
6/7/1980	1.00 in.	0	0	0	0	Countywide
4/13/1981	2.00 in.	0	0	0	0	Countywide
4/13/1981	3.00 in.	0	0	0	0	Countywide
4/13/1981	1.50 in.	0	0	0	0	Countywide
5/21/1987	1.00 in.	0	0	0	0	Countywide
5/17/1991	1.00 in.	0	0	0	0	Countywide
5/17/1991	1.00 in.	0	0	0	0	Countywide
5/17/1991	2.00 in.	0	0	0	0	Countywide
5/9/1995	1.75 in.	0	0	0	0	Sheffield
5/9/1995	1.75 in.	0	0	0	0	Neponset
5/9/1995	2.75 in.	0	0	0	0	Walnut
5/9/1995	1.75 in.	0	0	0	0	Normandy
5/18/1997	1.75 in.	0	0	0	0	Princeton
5/18/1997	1.50 in.	0	0	0	0	Princeton
5/18/1997	1.00 in.	0	0	0	0	Princeton
6/18/1998	1.75 in.	0	0	0	0	Princeton
4/10/1999	1.00 in.	0	0	0	0	Wyanet
4/10/1999	0.75 in.	0	0	0	0	Princeton
4/10/1999	1.00 in.	0	0	0	0	Walnut
6/11/1999	0.75 in.	0	0	0	0	Dalzell
5/11/2000	1.00 in.	0	0	0	0	Ohio
5/18/2000	1.00 in.	0	0	0	5K	Walnut
4/9/2001	0.75 in.	0	0	0	0	Manlius
4/9/2001	0.75 in.	0	0	0	0	Dover
10/24/2001	0.75 in.	0	0	0	0	Manlius
4/4/2003	1.00 in.	0	0	0	0	Depue
4/30/2003	0.88 in.	0	0	0	0	Countywide
4/30/2003	1.00 in.	0	0	50K	0	Princeton
4/30/2003	0.75 in.	0	0	0	0	Wyanet
5/9/2003	1.00 in.	0	0	50K	0	La Moille
5/10/2003	0.75 in.	0	0	0	0	Walnut
5/10/2003	0.75 in.	0	0	0	0	Walnut
6/28/2003	1.00 in.	0	0	0	350K	Zearing
4/20/2004	2.50 in.	0	0	30K	0	Spring Valley
5/7/2004	1.00 in.	0	0	2K	5K	Depue
5/7/2004	0.88 in.	0	0	0	0	Spring Valley
5/10/2004	0.75 in.	0	0	0	5K	La Moille
7/13/2004	4.00 in.	0	0	20K	40K	La Moille
7/13/2004	2.00 in.	0	0	7K	7K	Arlington
7/13/2004	1.00 in.	0	0	0	4K	Ohio

7/13/2004	1.00 in.	0	0	4K	4K	Van Orin
7/13/2004	1.75 in.	0	0	4K	5K	Van Orin
3/30/2005	0.88 in.	0	0	0	0	Princeton
3/30/2005	0.75 in.	0	0	0	0	Princeton
6/29/2005	0.75 in.	0	0	0	5K	Tiskilwa
7/25/2005	0.88 in.	0	0	2K	1K	Cherry
9/22/2005	1.75 in.	0	0	2K	0	Wyanet
9/22/2005	2.75 in.	0	0	2.0M	0	Princeton
9/22/2005	2.75 in.	0	0	50K	0	Bureau
9/22/2005	1.00 in.	0	0	10K	0	Depue
9/22/2005	0.88 in.	0	0	0	0	Ottville
4/13/2006	0.75 in.	0	0	0	0	Princeton
4/13/2006	0.88 in.	0	0	0	0	Whitefield
5/24/2006	0.75 in.	0	0	0	0	Princeton
5/24/2006	0.75 in.	0	0	0	1K	Manlius
6/25/2006	0.75 in.	0	0	0	0	Bureau
10/2/2006	0.88 in.	0	0	0	0	Princeton
10/2/2006	1.50 in.	0	0	1K	0	Princeton
10/2/2006	1.00 in.	0	0	0	0	Princeton
3/1/2007	0.88 in.	0	0	0	0	Princeton
6/1/2007	0.75 in.	0	0	0	0	Spring Valley
Events: 64	Total:	0	0	2.232M	432K	

Marshall County Hail 01/01/1950 - 02/28/08

Date	Size	Deaths	Injuries	Property Damage	Crop Damage	
8/15/1966	0.75 in.	0	0	0	0	Countywide
6/13/1975	0.75 in.	0	0	0	0	Countywide
4/13/1981	1.75 in.	0	0	0	0	Countywide
8/23/1993	0.75 in.	0	0	0	0	Camp Grove
4/19/1996	1.75 in.	0	0	0	0	Toluca
6/13/1996	1.00 in.	0	0	0	0	Sparland
6/13/1996	1.50 in.	0	0	0	0	Sparland/Lacon
5/18/2000	1.50 in.	0	0	0	0	Henry
4/9/2001	2.75 in.	0	0	0	0	Henry
6/4/2002	0.88 in.	0	0	0	0	Varna
6/25/2002	0.75 in.	0	0	0	0	Lacon
4/4/2003	1.00 in.	0	0	0	0	Toluca
4/30/2003	0.75 in.	0	0	0	0	Henry
5/14/2003	1.00 in.	0	0	0	0	Lacon
7/13/2004	0.75 in.	0	0	0	0	Toluca
3/30/2005	1.75 in.	0	0	0	0	Toluca
3/30/2005	1.00 in.	0	0	0	0	Wenona
3/30/2005	0.88 in.	0	0	0	0	Wenona
3/30/2005	1.00 in.	0	0	0	0	Henry
4/20/2005	0.88 in.	0	0	0	0	Lacon
3/12/2006	0.88 in.	0	0	0	0	Lacon
3/12/2006	0.75 in.	0	0	0	0	Sparland
3/12/2006	1.25 in.	0	0	0	0	Henry
3/12/2006	1.75 in.	0	0	0	0	Lacon
3/12/2006	1.00 in.	0	0	0	0	Henry
3/12/2006	0.75 in.	0	0	0	0	Lacon
4/13/2006	1.75 in.	0	0	0	0	Varna
4/13/2006	1.50 in.	0	0	0	0	Camp Grove
4/16/2006	0.75 in.	0	0	0	0	Sparland
5/24/2006	0.88 in.	0	0	0	0	Toluca
5/29/2006	0.75 in.	0	0	0	0	Wenona
10/2/2006	0.88 in.	0	0	0	0	Lacon
8/23/2007	1.00 in.	0	0	0	0	Henry
8/23/2007	1.00 in.	0	0	0	0	Henry
Events: 34	Total:	0	0	0	0	

Stark County Hail 01/01/1950 - 02/28/2008

Date	Size	Deaths	Injuries	Property Damage	Crop Damage	
3/3/1955	1.50in	0	0	0	0	Countywide
4/30/1973	1.75in	0	0	0	0	Countywide
6/14/1974	0.75in	0	0	0	0	Countywide
6/14/1975	0.75in	0	0	0	0	Countywide
6/14/1975	1.75in	0	0	0	0	Countywide
11/1/1982	1.75in	0	0	0	0	Countywide
9/28/1986	1.75in	0	0	0	0	Countywide
4/30/1997	0.75in	0	0	0	0	Bradford
8/3/1997	0.75in	0	0	0	0	La Fayette
6/18/1998	0.75in	0	0	0	0	Bradford
4/19/2000	0.75in	0	0	0	0	Elmira
4/20/2000	1.00in	0	0	0	0	La Fayette
5/18/2000	0.75in	0	0	0	0	Toulon
4/6/2001	1.75in	0	0	0	0	La Fayette
4/9/2001	3.0in	0	0	0	0	Castleton
4/30/2003	0.75in	0	0	0	0	Castleton
5/14/2003	0.75in	0	0	0	0	Bradford
7/8/2003	1.75in	0	0	0	0	Bradford
5/20/2004	0.75in	0	0	0	0	Toulon
7/9/2004	1.75in	0	0	0	0	Toulon
8/17/2004	0.75in	0	0	0	0	Toulon
3/30/2005	1.75in	0	0	0	0	Toulon
3/12/2006	0.75in	0	0	0	0	Toulon
3/12/2006	0.88in	0	0	0	0	Bradford
3/12/2006	0.75in	0	0	0	0	Wyoming
3/12/2006	0.75in	0	0	0	0	Wyoming
5/17/2006	1.00in	0	0	0	0	Toulon
5/17/2006	1.75in	0	0	0	0	Wyoming
10/2/2006	0.75in	0	0	0	0	Bradford
5/26/2007	0.88in	0	0	0	0	Toulon
8/23/2007	0.75in	0	0	0	0	Bradford
Events: 31		Total:	0	0	0	0

Bureau County TORNADOS 01/01/1950 - 02/28/08

Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
12/6/1951	F3	1	1	250K	0	Countywide
4/27/1956	F1	0	0	25K	0	Countywide
4/27/1956	F1	0	0	25K	0	Countywide
6/8/1962	F1	0	0	3K	0	Countywide
4/21/1967	F1	0	0	25K	0	Countywide
4/21/1973	F1	0	0	250K	0	Countywide
4/21/1973	F1	0	0	250K	0	Countywide
6/20/1974	F	0	0	3K	0	Countywide
6/14/1975	F2	0	0	250K	0	Countywide
11/9/1975	F1	0	0	25K	0	Countywide
3/4/1976	F3	0	0	250K	0	Countywide
12/2/1982	F0	0	0	3K	0	Countywide
5/9/1995	F0	0	0	200K	0	Countywide
5/9/1995	F3	0	0	3.0M	0	Neponset
5/27/1995	F0	0	0	20K	0	Sheffield
4/19/1996	F0	0	0	0	0	Tiskilwa
4/30/1997	F1	0	0	20K	0	Princeton
5/18/1997	F0	0	0	0	0	Manlius
6/18/1998	F0	0	0	0	0	Manlius
5/18/2000	F0	0	0	15K	0	Manlius
5/18/2000	F0	0	0	10K	0	Neponset
5/10/2003	F0	0	0	250K	0	Neponset
5/10/2003	F0	0	0	50K	0	Zearing
4/20/2004	F0	0	0	10K	0	Whitefield
6/10/2004	F1	0	0	12K	4K	Neponset
6/10/2004	F1	0	0	12K	4K	Neponset
7/13/2004	F0	0	0	20K	15K	Van Orin
7/13/2004	F0	0	0	10K	15K	Van Orin
Events: 28	Total:	1	1	4.987M	38K	

Marshall County TORNADOS 01/01/1950 - 02/28/08

Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
4/24/1965	F3	0	1	25K	0	Countywide
7/17/1972	F3	0	0	2.5M	0	Countywide
7/6/1975	F1	0	0	3K	0	Countywide
4/9/2001	F0	0	0	0	0	Camp Grove
4/20/2004	F1	0	0	250K	0	Camp Grove
5/7/2004	F0	0	0	0	0	Henry
Events: 6	Total:	0	1	2.778M	0	

Stark County Tornadoes 01/01/1950 - 02/28/08

Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage	
9/26/1959	F2	0	0	25K	0	Countywide
7/23/1967	F2	0	0	25K	0	Countywide
7/17/1972	F1	0	0	2.5M	0	Countywide
7/23/1975	F0	0	0	3K	0	Countywide
4/30/1997	F0	0	0	0	0	Duncan
8/3/1997	F0	0	0	0	0	La Fayette
4/20/2004	F1	0	0	0	0	Wyoming
Events: 7	Total:	0	0	2.553M	0	

Bureau County Floods 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
2/20/1997	Flood	0	0	0	0	CountyWide
7/21/1998	Urban/Small Stream Flood	0	0	0	0	CountyWide
10/17/1998	Flash Flood	0	0	0	0	CountyWide
5/31/2000	Urban/Small Stream Flood	0	0	0	0	CountyWide
2/24/2001	Urban/Small Stream Flood	0	0	0	0	CountyWide
7/18/2001	Urban/Small Stream Flood	0	0	0	0	Princeton
5/12/2002	Flash Flood	0	0	0	0	CountyWide
6/4/2002	Flash Flood	0	0	0	0	Princeton
5/14/2003	Flash Flood	0	0	100K	0	Princeton
Events: 9	Total:	0	0	100K	0	

Marshall County Floods 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
5/14/1995	Flood	0	0	0	0	Countywide
5/27/1995	Flash Flood	0	0	0	0	Countywide
6/1/1995	Flood	0	0	0	0	Countywide
6/13/1996	Flash Flood	0	0	0	0	Sparland
2/21/1997	Flood	0	0	0	0	Countywide
3/1/1997	Flood	0	0	0	0	Countywide
6/5/2001	Flash Flood	0	0	0	0	Sparland
5/12/2002	Flood	1	0	0	0	Countywide
5/1/2003	Flash Flood	0	0	0	0	West
5/30/2004	Flash Flood	0	0	0	0	Lacon
5/30/2004	Flash Flood	0	0	0	0	Henry
Events: 11	Total:	1	0	0	0	

Stark County Floods 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
5/11/2002	Flash Flood	0	0	0	0	West Jersey
8/13/2002	Flash Flood	0	0	0	0	Wyoming
5/30/2004	Flash Flood	0	0	0	0	Toulon
5/30/2004	Flash Flood	0	0	0	0	Countywide
8/17/2004	Flash Flood	0	0	0	0	Toulon
Events: 5	Total:	0	0	0	0	

Bureau County Winter Storms 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
1/18/1995	Heavy Snow	0	0	0	0	Countywide
11/10/1995	Snow/sleet/freezing Rain	0	0	0	0	Countywide
11/27/1995	Snow/sleet/freezing Rain	0	0	0	0	Countywide
1/18/1996	Winter Storm	0	0	0	0	Countywide
12/27/1996	Winter Storm	0	0	0	0	Countywide
1/9/1997	Winter Storm	0	0	0	0	Countywide
1/15/1997	Winter Storm	0	0	0	0	Countywide
1/24/1997	Winter Storm	0	0	0	0	Countywide
2/3/1997	Winter Storm	0	0	0	0	Countywide
4/10/1997	Heavy Snow	0	0	0	0	Countywide
12/9/1997	Heavy Snow	0	0	0	0	Countywide
12/24/1997	Heavy Snow	0	0	0	0	Countywide
1/8/1998	Winter Storm	0	0	0	0	Countywide
3/8/1998	Heavy Snow	0	0	0	0	Countywide
12/30/1998	Winter Storm	0	0	0	0	Countywide
1/1/1999	Winter Storm	0	0	0	0	Countywide
1/18/1999	Winter Storm	0	0	0	0	Countywide
3/5/1999	Winter Storm	0	0	0	0	Countywide
3/8/1999	Winter Storm	0	0	0	0	Countywide
12/16/1999	Winter Storm	0	0	0	0	Countywide
12/19/1999	Winter Storm	0	0	0	0	Countywide
12/23/1999	Winter Storm	0	0	0	0	Countywide
1/3/2000	Winter Storm	0	0	0	0	Countywide
1/17/2000	Winter Storm	0	0	0	0	Countywide
1/19/2000	Winter Storm	0	0	0	0	Countywide
1/29/2000	Winter Storm	0	0	0	0	Countywide
2/17/2000	Winter Storm	0	0	0	0	Countywide
12/1/2000	Snow	0	0	0	0	Countywide
12/7/2000	Snow/freezing Rain	0	0	0	0	Countywide
12/10/2000	Winter Storm	0	0	0	0	Countywide

12/13/2000	Snow	0	0	0	0	Countywide
12/15/2000	Ice Storm	0	0	0	0	Countywide
12/18/2000	Snow/blowing Snow	0	0	0	0	Countywide
12/20/2000	Snow	0	0	0	0	Countywide
12/28/2000	Snow	0	0	0	0	Countywide
1/13/2001	Snow/freezing Rain	0	0	0	0	Countywide
1/26/2001	Snow/blowing Snow	0	0	0	0	Countywide
1/28/2001	Ice Storm	0	0	0	0	Countywide
2/23/2001	Freezing Rain	0	0	0	0	Countywide
1/30/2002	Winter Storm	0	0	0	0	Countywide
3/1/2002	Winter Storm	0	0	0	0	Countywide
2/14/2003	Winter Storm	0	0	0	0	Countywide
3/4/2003	Winter Storm	0	0	0	0	Countywide
5/3/2003	Frost/freeze	0	0	0	0	Countywide
1/4/2004	Heavy Snow	0	0	15K	0	Countywide
1/5/2005	Ice Storm	0	0	80K	0	Countywide
5/3/2005	Frost/freeze	0	0	0	26.4M	Countywide
12/8/2005	Winter Weather/mix	0	0	0	0	Countywide
1/20/2006	Winter Storm	0	0	10K	0	Countywide
2/16/2006	Ice Storm	0	0	4K	0	Countywide
11/30/2006	Winter Storm	0	0	0	0	Countywide
12/1/2006	Winter Storm	0	0	0	0	Countywide
1/13/2007	Winter Weather	0	0	0	0	Countywide
1/21/2007	Winter Weather	0	0	0	0	Countywide
2/6/2007	Winter Weather	0	0	0	0	Countywide
2/13/2007	Winter Storm	0	0	0	0	Countywide
2/16/2007	Winter Weather	0	0	0	0	Countywide
2/24/2007	Ice Storm	0	0	0	0	Countywide
4/3/2007	Frost/freeze	0	0	0	0	Countywide
12/1/2007	Ice Storm	0	0	0	0	Countywide
12/4/2007	Winter Weather	0	0	0	0	Countywide
12/11/2007	Ice Storm	0	0	0	0	Countywide
12/15/2007	Winter Weather	0	0	0	0	Countywide
12/23/2007	Winter Weather	0	0	0	0	Countywide
12/28/2007	Winter Weather	0	0	0	0	Countywide
12/31/2007	Heavy Snow	0	0	0	0	Countywide
1/21/2008	Winter Weather	0	0	0	0	Countywide
1/29/2008	Winter Weather	0	0	0	0	Countywide
1/31/2008	Winter Weather	0	0	0	0	Countywide
2/1/2008	Winter Storm	0	0	0	0	Countywide
2/1/2008	Winter Weather	0	0	0	0	Countywide
2/3/2008	Winter Weather	0	0	0	0	Countywide
2/6/2008	Winter Storm	0	0	0	0	Countywide
2/25/2008	Winter Weather	0	0	0	0	Countywide
2/28/2008	Winter Weather	0	0	0	0	Countywide
Events: 75	Total:	0	0	109K	26.4M	

Marshall County Winter Storms 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
12/8/1995	Winter Storm	1	0	0	0	Central Illinois
12/18/1995	Winter Storm	1	0	0	0	Central Illinois
1/4/1996	Winter Storm	0	0	0	0	Countywide
1/18/1996	Winter Storm	0	2	0	0	Countywide
1/8/1997	Heavy Snow	0	6	0	0	Countywide
1/15/1997	Winter Storm	1	7	0	0	Countywide
1/24/1997	Winter Storm	0	0	0	0	Countywide
1/26/1997	Winter Storm	0	9	0	0	Countywide
4/10/1997	Heavy Snow	0	9	0	0	Countywide
12/9/1997	Heavy Snow	1	0	0	0	Countywide
12/24/1997	Heavy Snow	0	0	0	0	Countywide
1/8/1998	Heavy Snow	0	0	0	0	Countywide
1/14/1998	Winter Storm	0	0	0	0	Countywide
3/8/1998	Winter Storm	2	0	0	0	Countywide
1/1/1999	Heavy Snow	1	1	0	0	Countywide
3/8/1999	Heavy Snow	0	5	0	0	Countywide
1/19/2000	Winter Storm	0	2	0	0	Countywide
2/17/2000	Ice Storm	0	1	0	0	Countywide
12/11/2000	Winter Storm	0	0	0	0	Countywide
1/30/2002	Winter Storm	0	0	0	0	Countywide
3/1/2002	Heavy Snow	0	0	0	0	Countywide
2/14/2003	Heavy Snow	0	0	0	0	Countywide
1/4/2004	Winter Storm	0	0	0	0	Countywide
11/24/2004	Winter Storm	0	4	0	0	Countywide
1/5/2005	Ice Storm	0	0	0	0	Countywide
11/30/2006	Winter Storm	0	0	0	0	Countywide
12/1/2006	Winter Storm	0	0	0	0	Countywide
2/13/2007	Winter Storm	0	0	0	0	Countywide
2/24/2007	Ice Storm	0	0	0	0	Countywide
4/5/2007	Frost/Freeze	0	0	0	0	Countywide
12/1/2007	Ice Storm	0	0	0	0	Countywide
1/31/2008	Heavy Snow	0	0	0	0	Countywide
2/1/2008	Heavy Snow	0	0	0	0	Countywide
Events: 33	Total:	7	46	0	0	

Stark County Winter Storms 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
1/18/1995	Heavy Snow	0	0	0	0	
12/8/1995	Winter Storm	1	0	0	0	Central Illinois
12/18/1995	Winter Storm	1	0	0	0	Central Illinois
1/4/1996	Winter Storm	0	0	0	0	Countywide
1/18/1996	Winter Storm	0	2	0	0	Countywide
1/8/1997	Heavy Snow	0	6	0	0	Countywide
1/15/1997	Winter Storm	1	7	0	0	Countywide
1/24/1997	Winter Storm	0	0	0	0	Countywide
1/26/1997	Winter Storm	0	9	0	0	Countywide
4/10/1997	Heavy Snow	0	9	0	0	Countywide
12/9/1997	Heavy Snow	1	0	0	0	Countywide
12/24/1997	Heavy Snow	0	0	0	0	Countywide
1/8/1998	Heavy Snow	0	0	0	0	Countywide
1/14/1998	Winter Storm	0	0	0	0	Countywide
3/8/1998	Winter Storm	2	0	0	0	Countywide
1/1/1999	Heavy Snow	1	1	0	0	Countywide
3/8/1999	Heavy Snow	0	5	0	0	Countywide
1/19/2000	Winter Storm	0	2	0	0	Countywide
2/17/2000	Ice Storm	0	1	0	0	Countywide
12/11/2000	Winter Storm	0	0	0	0	Countywide
1/30/2002	Winter Storm	0	0	0	0	Countywide
3/1/2002	Heavy Snow	0	0	0	0	Countywide
2/14/2003	Heavy Snow	0	0	0	0	Countywide
1/4/2004	Winter Storm	0	0	0	0	Countywide
11/24/2004	Winter Storm	0	4	0	0	Countywide
1/5/2005	Ice Storm	0	0	0	0	Countywide
11/30/2006	Winter Storm	0	0	0	0	Countywide
12/1/2006	Winter Storm	0	0	0	0	Countywide
1/14/2007	Ice Storm	0	0	0	0	Countywide
2/13/2007	Winter Storm	0	0	0	0	Countywide
2/24/2007	Ice Storm	0	0	0	0	Countywide
4/5/2007	Frost/Freeze	0	0	0	0	Countywide
12/1/2007	Ice Storm	0	0	0	0	Countywide
Events: 33	Total:	7	46	0	0	

Bureau County Droughts 01/01/1950 - 02/28/2008

Date	Deaths	Injuries	Property Damage	Crop Damage	
6/15/2005	0	0	0	0	Countywide
7/1/2005	0	0	0	180.1M	Countywide
8/1/2005	0	0	0	48.5M	Countywide
9/1/2005	0	0	0	0	Countywide
10/1/2005	0	0	0	0	Countywide
11/1/2005	0	0	0	0	Countywide
12/1/2005	0	0	0	0	Countywide
1/1/2006	0	0	0	0	Countywide
2/1/2006	0	0	0	0	Countywide
3/1/2006	0	0	0	0	Countywide
Events: 10	0	0	0	228.570M	

Bureau County Extreme Temperatures 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
1/30/1996	Cold	0	0	0	0	Countywide
2/1/1996	Cold	0	0	0	0	Countywide
1/10/1997	Windchill	0	1	0	0	Countywide
1/17/1997	Windchill	0	0	0	0	Countywide
7/25/1997	Heat	0	0	0	0	Countywide
7/19/1999	Heat	1	0	0	0	Countywide
8/31/2000	Heat	0	0	0	0	Countywide
12/1/2000	Cold	0	0	0	0	Countywide
12/16/2000	Windchill	0	0	0	0	Countywide
12/21/2000	Windchill	0	0	0	0	Countywide
12/23/2000	Windchill	0	0	0	0	Countywide
2/2/2007	Windchill/Cold	0	0	0	0	Countywide
Events: 12	Total:	1	1	0	0	

Marshall County Extreme Temperatures 01/01/1950 - 02/28/08

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
2/2/1996	Cold	2	0	0	0	Countywide
7/26/1997	Heat	2	0	0	0	Countywide
6/26/1998	Heat	1	0	0	0	Countywide
1/5/1999	Cold	0	0	0	0	Countywide
7/20/1999	Heat	4	0	0	0	Countywide
7/28/1999	Heat	1	0	0	0	Countywide
7/22/2005	Heat	1	0	0	0	Countywide
7/30/2006	Heat	1	0	0	0	Countywide
8/1/2006	Heat	0	0	0	0	Countywide
Events: 9		Total: 12	0	0	0	

Stark County Extreme Temperatures 01/01/1950 - 02/28/2008

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	
2/2/1996	Cold	2	0	0	0	Countywide
7/26/1997	Heat	2	0	0	0	Countywide
6/26/1998	Heat	1	0	0	0	Countywide
1/5/1999	Cold	0	0	0	0	Countywide
7/20/1999	Heat	4	0	0	0	Countywide
7/28/1999	Heat	1	0	0	0	Countywide
7/22/2005	Heat	1	0	0	0	Countywide
7/30/2006	Heat	1	0	0	0	Countywide
8/1/2006	Heat	0	0	0	0	Countywide
Events: 9		Total: 12	0	0	0	

2007 Illinois Natural Hazard Mitigation Plan

The Illinois Natural Hazard Mitigation Planning Committee has developed a methodology for rating natural hazards in Illinois. This process is explained on the next page with the charts beginning on page 21 and maps using this methodology have been prepared and inserted into this document for each natural hazard. The maps that are in this document by hazard were prepared using a table that is in the supporting documentation file.

This system for rating natural hazards in Illinois is not only being used here, but is going to be posted on the IEMA Mitigation website for the local jurisdictions to use in their planning process. All local jurisdictions will be encouraged to adopt this process in their mitigation planning activities. The adoption of a standard system will lend itself to the blending of information. As local mitigation plans are received, their risk assessments will be reviewed by the State Hazard Mitigation Officer and incorporated into the State Hazard Mitigation Plan.

B. Illinois Hazard Rating Process

The overall objective of this process is to devise a method to compare and evaluate natural hazards in Illinois. In order to accomplish this task, a period of time was selected, data was collected on the natural hazards and categories for evaluation were identified. These categories were sub-divided into three divisions and scores for each division were given. The exact procedure is discussed in the next several pages and this section is concluded with a table revealing the results of this process.

There are four categories (Historical/Probability, Vulnerability, Severity of Impact and Population) that will identify and define the ratings of each hazard, noted in the five tables on the next three pages. The first table will identify what has occurred in the past as a guide to projecting the probability for future occurrences. The second table will identify the number of citizens who might be impacted based on individual criteria identified in the methodology. The third table will estimate the severity by considering health and safety, continuity of operations, property, facilities, infrastructure, environment, economic and financial situation. The fourth category is population with two tables: table 4A is based on the 2000 census population and table 4B is based on the projected population growth for the next ten years.

The first three tables are weighted three times as much as the last two tables combined. Each hazard (for example flood) will have a score from each of the five tables. These tables are displayed and the score to be used is identified on the following pages by table. This last column under each hazard will be the total overall score of the five tables. This overall score will be evaluated, as shown below:

- Low – 0 to 12 (green)
- Guarded – 13 to 24 (blue)
- Elevated – 25 to 36 (yellow)
- High – 37 to 48 (orange)
- Severe – 49 to 60 (red)

For example, under flood there will be a number from each of the five tables. These five numbers will be totaled to arrive at the overall risk for floods. This rating process is being done by county for all major natural hazards in Illinois. These numbers will be transferred onto a separate spreadsheet by county and colored coded as indicated above to readily indicate the hazard ratings.

1) HISTORICAL/PROBABILITY (frequency)

- The number of times that a disaster has occurred in a jurisdiction in the past 50 years
- The information is being used to determine and evaluate the likelihood for future disasters

Low (6)	0 to 10 occurrences in the last 50 years
Medium (12)	11 to 50 occurrences in the last 50 years
High (18)	More than 50 occurrences in the last 50 years

2) VULNERABILITY (percentage of people)

- The relationship of where people live in or near the hazard area
- The percentage of people that will be adversely affected should the hazard occur

Low (6)	Less than 10% of the total population of the jurisdiction
Medium (12)	10% to 25% of the total population of the jurisdiction
High (18)	More than 25% of the total population of the jurisdiction

3) SEVERITY OF IMPACT (injuries, fatalities, personal property & infrastructure)

- The worst conceivable impact to human life and property which could result from a hazard
- The essential facilities are defined for this purpose as PUBLIC SAFETY (fire, police & local government) and UTILITIES (electric, gas, telephone water & sewer)

Low (6)	Minor injuries (under 50) & property damage (under \$1,000,000), or less than 24 hour shutdown of essential facilities
Medium (12)	Serious injury (more than 50), major property damage (structural stability) (\$1,000,001 to \$15,000,000), or 24 to 72 hour shutdown of essential facilities
High (18)	Multiple deaths (more than 5), property destroyed or damaged beyond repair (more than \$15,000,000), or more than 3 days of shutdown for essential facilities

POPULATION-COMBINED FOURTH CRITERIA based on 1/3 the value of the above tables. The committee was instructed to include growth as a factor for the risk assessment. After a review of the data the committee concluded that giving the future growth equal weight with the other factors skewed the risk assessment. Counties range in population from approximately 5,000 to 5,000,000. To say a population growth of 25% in a smaller county (1, 250) would have more of an impact than a larger county with 10% growth (500,000) was not acceptable to the committee.

The committee also determined that because of the large population disparity between counties the Vulnerability and Severity of Impact didn't fully distinguish the quantity of people that could be exposed to risk. The committee decided to give the population of the counties equal weight with the growth factor. The planning committee discussed the impact of population on the risk assessment at length. While population is acknowledged to be an important factor to be considered, it is of lesser significance than the first three criteria and has been assigned 1/3 the value. On a scale of 100 the first three tables would receive 30 each and the remaining 10 was allocated to population.

4A) POPULATION (number in jurisdiction)

- The actual 2000 population census figure per jurisdiction
- The quantity will be used to identify a slight increase in risk

Low (1)	0 to 100,000 population in the jurisdiction
Medium (2)	100,001 to 500,000 population in the jurisdiction
High (3)	More than 500,000 population in the jurisdiction

4B) POPULATION GROWTH (percentage of increase)

- The projected population growth in a jurisdiction over the next 10 years
- The population growth estimates will be used to identify a potential increase to risk

Low (1)	% of decrease to 10% projected population increase in the jurisdiction
Medium (2)	11% to 25% projected population increase in the jurisdiction
High (3)	More than 25% projected population increase in the jurisdiction

HAZARD WORKSHEET METHODOLOGY

More than fifty years of Illinois hazard data (1950-2003) was obtained from the National Climatic Data Center for severe storms (thunderstorms, high wind, lightning and hail) and tornadoes, floods, severe winter storms, drought, and extreme heat. The Illinois State Geological Survey was able to supply an equivalent time frame of data for earthquake activity in Illinois. All of this information has been entered into a spreadsheet database for ease of information analysis and for using GIS mapping capabilities to display and identify Illinois hazard areas.

Using the tables in this rating process, the information has been extracted and analyzed in the following manner:

Historical/probability—An average of the number of events that have occurred since 1950.

Vulnerability—This section required an individual analysis by hazard, as indicated below:

- Severe Storm—All counties are susceptible to severe storms. At any one time, it has been determined that over 25% of the county population might experience severe storms. This determination is supported by Mr. Chris Miller, WCM, National Weather Service, Lincoln, IL, as follows: “Damage from severe thunderstorms is usually on a much broader spatial scale in the state of Illinois. The past 49 years of data indicated that more than 11,000 reports of severe thunderstorm damage occurred (approximately 7,000 wind and 4,000 hail reports) in the state of Illinois. Approximately 80% of the severe thunderstorms are multicellular or a supercell hybrid, which are capable of producing damaging wind and/or large hail over approximately a 400 to 500 square mile area. The remainder of severe thunderstorms are squall lines, which can produce damage over 100% of the affected counties. Thus, the vulnerability to severe thunderstorms should be high (greater than 25% of the population affected) in each county across Illinois. This is reinforced by a study done by Stanley Chagnon of Chagnon Climatologist, in his publication *“Thunderstorms Across the Nation - An Atlas of Storms, Hail, and Their Damages in the 20th Century”*. This study indicated that in an analysis of thunderstorm caused catastrophes, Illinois ranked 4th in the United States in total thunderstorm catastrophes between 1949 and 1998.”
- Tornado—While all of Illinois is susceptible to tornadoes (in fact north, south, east and west counties have all been hit by tornadoes) it is estimated less than 10% of a county would be impacted by a tornado at any one time. This estimation is

supported by Mr. Chris Miller, WCM, National Weather Service, Lincoln, IL, as follows: “Based on data of tornadoes in the state of Illinois for the 57 year period from 1950 - 2007, nearly 73% were rated as weak tornadoes (F0/F1), 25% were rated as strong tornadoes (F2/F3), and 2% were rated as violent tornadoes (F4/F5) on the Fujita damage assessment scale. The data also suggests that weak tornadoes are typically 100 yards wide with a path length of 1 to 2 miles, strong tornadoes are usually one-quarter to one-half mile wide with a path length of up to 20 miles, with violent tornadoes around 1 mile wide and path lengths greater than 20 miles. This would mean that with nearly 2050 tornadoes reported, approximately 3200 square miles of Illinois have been affected by tornadoes.” “Considering that Illinois is nearly 56,000 square miles in size, with the average county around 545 square miles, the average population affected has been about 6%. Thus, every county in Illinois should have a “Low” vulnerability to tornadoes, (low being defined as less than 10% of the total population).”

- Flood–History supports the assumption that all counties in Illinois are susceptible to some type of flooding. As stated above in the tornado analysis, it is estimated that 10% of a county would be impacted by flooding at any one time. Illinois Department of Natural Resources provided information on the 100 Year Floodzone in Unincorporated Areas ranging from 52.1% to 2.7% of the county being in the 100 year floodzone with the average being 13.5%. In general, incorporated areas would have a lower average floodzone, therefore, 10% was used for the overall county average.
- Drought–In general, farmers are the first group to feel the impact of a drought. Besides causing stress to crops and livestock, many farmers rely on their own dug wells or wells drilled into shallow aquifers for their water supply. Both types of wells are very vulnerable to drought conditions. Public water supplies are typically

more robust against drought but are not immune from long-term drought conditions. Public water supplies that rely on surface water supplies are historically more vulnerable to drought than those that rely on deep aquifers. The Illinois State Water Survey has produced a document dealing with drought and drought planning. The reference is *The Water Cycle and Water Budgets in Illinois: A Framework for Drought and Water-supply Planning* (Illinois State Water Survey, 2006, ISWS IEM 2006-02).

- Extreme Heat—The most at risk population is the sickly and the elderly. We have arbitrarily identified the elderly population by county and used this as the basis. As stated earlier the young people in poor health are also at risk. The assumption is made that the young people in poor health will be offset by the healthy elderly.
- Severe Winter Storm—One hundred percent of the population is at risk from a severe winter storm in the State of Illinois.
- Earthquake—The Applied Technology Council (ATC) has prepared a publication on rapid visual screening of seismically hazardous buildings. The National Earthquake Hazards Reduction Program Map (FEMA 154, Second Edition, 2002) for Illinois from this publication was used.

Severity of Impact—The various detailed parameters are identified in this table. When evaluating each county based on the 50+ year history, if there is any conflicting data the highest level will be assumed. In keeping with this philosophy and since the worst known earthquake (1811-1812) occurred outside of the 50+ year period of time, the decision was made to overlay the ATC map with

the Modified Mercalli Scale Map (Modified Mercalli Intensities based on a 7.6 Magnitude Earthquake along the New Madrid Seismic Fault) to evaluate Illinois counties.

Population—The Illinois Department of Commerce and Economic Opportunity provided the 2000 census population and the projected population growth by county through 2010. This information was used in supplying information for the fourth and fifth tables.

Bureau County Number of Natural Hazard Occurrences								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Bureau County	13	6	75	12	38	0	10	12
Buda	13	6	75	12	40	0	10	12
Depue	13	6	75	12	40	1	10	15
LaMoille	13	6	75	12	41	0	10	15
Princeton	14	9	75	12	59	2	10	27
Seatonville	13	6	75	12	38	0	10	12
Sheffield	14	6	75	12	39	0	10	12
Spring Valley	13	6	75	12	40	0	10	15
Tiskilwa	14	6	75	12	41	0	10	13
Walnut	13	6	75	12	43	0	10	17

Marshall County Number of Natural Hazard Occurrences								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Marshall County	3	6	33	9	32	N/A	N/A	3
Henry	4	7	33	9	41	N/A	N/A	11
Lacon	3	7	33	9	42	N/A	N/A	10
Sparland	3	8	33	9	39	N/A	N/A	7
Toluca	3	6	33	9	35	N/A	N/A	8
Wenona	3	6	33	9	34	N/A	N/A	6

Stark County Number of Natural Hazard Occurrences								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Stark County	4	1	33	9	25	N/A	N/A	5
Bradford	4	1	33	9	30	N/A	N/A	12
Lafayette	5	1	33	9	29	N/A	N/A	8
Toulon	4	3	33	9	34	N/A	N/A	13
Wyoming	5	2	33	9	31	N/A	N/A	8

Bureau County Frequency over 50 years								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Bureau County	11.40	27.27	288.46	50.00	39.58	0.00	166.67	16.67
Buda	11.40	27.27	288.46	50.00	41.67	0.00	166.67	16.67
Depue	11.40	27.27	288.46	50.00	41.67	5.56	166.67	20.83
LaMoille	11.40	27.27	288.46	50.00	42.71	0.00	166.67	20.83
Princeton	12.28	40.91	288.46	50.00	61.46	11.11	166.67	37.50
Seatonville	11.40	27.27	288.46	50.00	39.58	0.00	166.67	16.67
Sheffield	12.28	27.27	288.46	50.00	40.63	0.00	166.67	16.67
Spring Valley	11.40	27.27	288.46	50.00	41.67	0.00	166.67	20.83
Tiskilwa	12.28	27.27	288.46	50.00	42.71	0.00	166.67	18.06
Walnut	11.40	27.27	288.46	50.00	44.79	0.00	166.67	23.61

Marshall County Frequency over 50 years								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Marshall County	3.49	23.08	126.92	37.50	40.00	N/A	N/A	3.57
Henry	4.65	26.92	126.92	37.50	51.25	N/A	N/A	13.10
Lacon	3.49	26.92	126.92	37.50	52.50	N/A	N/A	11.90
Sparland	3.49	30.77	126.92	37.50	48.75	N/A	N/A	8.33
Toluca	3.49	23.08	126.92	37.50	43.75	N/A	N/A	9.52
Wenona	3.49	23.08	126.92	37.50	42.50	N/A	N/A	7.14

Stark County Frequency over 50 years								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Stark County	4.08	8.33	126.92	37.50	32.05	N/A	N/A	4.72
Bradford	4.08	8.33	126.92	37.50	38.46	N/A	N/A	11.32
Lafayette	5.10	8.33	126.92	37.50	37.18	N/A	N/A	7.55
Toulon	4.08	25.00	126.92	37.50	43.59	N/A	N/A	12.26
Wyoming	5.10	16.67	126.92	37.50	39.74	N/A	N/A	7.55

Bureau County Vulnerability								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Bureau County	Low	Low	High	Medium	High	High	Low	High
Buda	Low	Low	High	Medium	High	High	Low	High
Depue	Low	Low	High	Medium	High	High	Low	High
LaMoille	Low	Low	High	Medium	High	High	Low	High
Princeton	Low	Low	High	Medium	High	High	Low	High
Seatonville	Low	Low	High	Medium	High	High	Low	High
Sheffield	Low	Low	High	Medium	High	High	Low	High
Spring Valley	Low	Low	High	Medium	High	High	Low	High
Tiskilwa	Low	Low	High	Medium	High	High	Low	High
Walnut	Low	Low	High	Medium	High	High	Low	High

Marshall County Vulnerability								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Marshall County	Low	Low	High	Medium	High	N/A	N/A	High
Henry	Low	Low	High	Medium	High	N/A	N/A	High
Lacon	Low	Low	High	Medium	High	N/A	N/A	High
Sparland	Low	Low	High	Medium	High	N/A	N/A	High
Toluca	Low	Low	High	High	High	N/A	N/A	High
Wenona	Low	Low	High	Medium	High	N/A	N/A	High

Stark County Vulnerability								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Stark County	Low	Low	High	Medium	High	N/A	N/A	High
Bradford	Low	Low	High	Medium	High	N/A	N/A	High
Lafayette	Low	Low	High	Medium	High	N/A	N/A	High
Toulon	Low	Low	High	High	High	N/A	N/A	High
Wyoming	Low	Low	High	Medium	High	N/A	N/A	High

Bureau County Severity of Impact								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Bureau County	Low	Low	Low	Low	Low	Low	Low	Low
Buda	Low	Low	Low	Low	Low	Low	Low	Low
Depue	Low	Low	Low	Low	Low	Low	Low	Low
LaMoille	Low	Low	Low	Low	Low	Low	Low	Low
Princeton	Low	Low	Low	Low	Low	Low	Low	Low
Seatonville	Low	Low	Low	Low	Low	Low	Low	Low
Sheffield	Low	Low	Low	Low	Low	Low	Low	Low
Spring Valley	Low	Low	Low	Low	Low	Low	Low	Low
Tiskilwa	Low	Low	Low	Low	Low	Low	Low	Low
Walnut	Low	Low	Low	Low	Low	Low	Low	Low

Marshall County Severity of Impact								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Marshall County	Low	Low	High	High	Low	N/A	N/A	Low
Henry	Low	Low	High	High	Low	N/A	N/A	Low
Lacon	Low	Low	High	High	Low	N/A	N/A	Low
Sparland	Low	Low	High	High	Low	N/A	N/A	Low
Toluca	Low	Low	High	High	Low	N/A	N/A	Low
Wenona	Low	Low	High	High	Low	N/A	N/A	Low

Stark County Severity of Impact								
Communities	Tornado	Flood	Winter Storms	Extreme Temperatures	Thunder Storms	Lightning	Drought	Hail
Stark County	Low	Low	High	High	Low	N/A	N/A	Low
Bradford	Low	Low	High	High	Low	N/A	N/A	Low
Lafayette	Low	Low	High	High	Low	N/A	N/A	Low
Toulon	Low	Low	High	High	Low	N/A	N/A	Low
Wyoming	Low	Low	High	High	Low	N/A	N/A	Low

Floodplain Manager Contact Information

Community:	Name	Address	City, State, Zip	Phone	Fax	e-mail
Bureau County	Kristine Donarski	Room B-5, Courthouse, 700 S. Main Street	Princeton, Illinois 61356	815-875-1631	815-875-1631	bcesda1@yahoo.com.
Village of Buda	Kristine Donarski	Room B-5, Courthouse, 700 S. Main Street	Princeton, Illinois 61356	815-875-1631	815-875-1631	bcesda1@yahoo.com.
Village of De Pue	Eric Bryant	PO Pox 1068	DePue, IL 61322	815-228-1329		ebryant13@hotmail.com
City of Princeton	Pete Nelson	2 S. main St.	Princeton, IL 61356	815-879-3381		pnelson@princeton-il.com
Village of Seatonville						
Village of Sheffield	Kristine Donarski	Room B-5, Courthouse, 700 S. Main Street	Princeton, Illinois 61356	815-875-1631	815-875-1631	bcesda1@yahoo.com.
City of Spring Valley	Larry Good	215 N greenwood St.	Spring Valley, IL 61362	815-664-4221	815-664-2114	
Village of Tiskilwa	Randy Philhower	PO Box 433	Tiskilwa, IL 61368	815-646-4400		
Village of Walnut	Gary Brooks	114 Jackson St.	Walnut, IL 61376	815-379-2351	815-379-2262	
Marshall County	George Meister	PO Box 242	Lacon, IL 61540	309-246-6401	309-246-3446	
City of Henry	Tom Maubach	426 E. Park Row, PO Box 196	Henry, IL 61537	309-364-3056	309-364-3644	
City of Lacon						
Village of Sparland						
City of Toluca	Steve Piazze	520 N Linden St	Toluca, IL 61369	815-452-2241		
Village of Wenona	Bill Simmons	226 S. chestnut St.	Wenona, IL 61377	815-853-4227	815-853-0006	
Stark County	Fred Sams	RR2, PO Box 133	Toulon, IL 61483	309-286-5302		indiancreek@main1.net
Village of Bradford	Fred Sams	RR2, PO Box 133	Toulon, IL 61483	309-286-5302		indiancreek@main1.net
Village of LaFayette	Fred Sams	RR2, PO Box 133	Toulon, IL 61483	309-286-5302		indiancreek@main1.net
City of Toulon	Fred Sams	RR2, PO Box 133	Toulon, IL 61483	309-286-5302		indiancreek@main1.net
City of Wyoming	Fred Sams	RR2, PO Box 133	Toulon, IL 61483	309-286-5302		indiancreek@main1.net

Action Items

The following items are suggestions for Bureau County, Marshall County, and Stark County to implement to prepare for disaster:

1. Provide information and educate, from existing sources (e.g. IEMA, Red Cross), about the natural hazards that affect your community.
2. Identify and assess repetitive loss areas in your community.
3. Maintain outdoor warning sirens in good working condition and update when necessary.
4. Continue to promote and/or implement sustainable development or “smart growth” initiatives.
5. Participate in Severe Winter Storms Awareness, Tornado Awareness, and Earthquake Awareness weeks, and/or other natural hazard awareness programs relating to the community.
6. Include mitigation provisions when considering the creation of and/or the revision of plans and ordinances.
7. Follow FEMA’s development of the new rules and regulations of the Disaster Mitigation Act of 2000.
8. Work at becoming more StormReady and maintain being StormReady in the communities.
9. Allow staff to attend relevant conferences for continuing mitigation education.
10. Remain informed about the Illinois Department of Natural Resources Flood Mitigation Program.
11. Meet with stakeholders in the region, annually, to discuss the mitigation efforts of the area.
12. Consider the participation of your community in the Community Ratings System (CRS.)
13. Continue to improve coordination and communication between agencies and communities in the region.
14. Each community should establish a post disaster chain of command and have pertinent phone numbers readily available.

15. Inform communities in good standing with the National Flood Insurance Program that flood mitigation dollars will be available. If the community is not in good standing, determine the options to become in good standing, so funding will be available.
16. Use Digital Flood Insurance Rate Map data to identify newly mapped flood hazard areas and inform communities about their risk.
17. Work in developing and maintaining a database of all protected lands, identifying possible partners in the acquisition and maintenance of the hazard prone lands contiguous to protected lands.
18. Consider hazard resistant development in new parks such as restrooms doubling as safe rooms, and urban forestry practices.
19. Create open space in the floodplains to reduce the losses from flooding.
20. Consider implementing urban forestry programs to reduce the loss of power from trees near power lines.
21. Use the existing flood gauges to monitor the water level and be more prepared for flooding. Add additional gauges to monitor waterways.
22. Continue to work on local drainage issues.
23. Create new public information projects and continue to use projects in place to inform officials and citizens about mitigation.
24. Individual communities should assess and address the issues relating from flash flooding. Ways in which people and property can remain safe from water flows should be considered.
25. Areas in the river valley with steep banks and soft soils and other areas prone to mudslides should be identified and protected.
26. National Flood Insurance Program (NFIP) compliance. For all jurisdictions participating in the NFIP, adoption and enforcement of floodplain management regulations is required.
27. It is required that those jurisdictions participating in the plan, that are not in the NFIP, become compliant with the NFIP. To comply, jurisdictions must ensure that their adopted floodplain management ordinance and enforcement procedures meet NFIP requirements.

Activity Prioritization

Priority	Description
A: Very High	Projects that will permanently eliminate damages or significantly reduce the probability of deaths and injuries. These projects will mitigate the community's most significant hazards.
B: High	Projects and/or activities that permanently reduce damages from the community's most significant hazards. They also reduce the possibility of death or injury.
C: Medium	Projects and/or activities that help alert or educate the public to the approach of a threat and/or the need for mitigation from any hazard.
D: Low	Projects and/or activities that will permanently or significantly reduce the probability of deaths and injuries from the community's less significant hazards.
E. Very Low	Projects and/or activities that <i>are needed to</i> reduce the effects of all natural hazards and organize for mitigation purposes.

County of Bureau

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Kris Donarski, ESDA Coordinator, Room B-5, Courthouse, 700 S. Main St., Princeton, IL 61356	Staff Time & copies and prints	General Funds	Zoning Office; Floodplain Manager/ESDA Coordinator provides information and education to the public through: speaking engagements at local civic groups, nursing homes, schools; senior citizen groups; newspaper articles; appearances on the local radio talk show "Open Line"; public service announcements on the local cable television channel. Also provides education to the public by organizing, hosting and promoting a yearly weather spotter training class taught by personnel from the National Weather Service.	The general public is aware of potential hazards, but many think that disaster / emergency situations always happen to someone else in some far away place. I believe that the yearly reminders about things like Lightning Safety, Winter Storm Awareness, Tornado Awareness, etc. helps to keep vital information fresh in their minds. Also, every year we have new people moving into our community who may not be aware of what to do or how to protect themselves and/or their property during a severe weather event.	Ongoing
5	C		Staff Time & copies and prints	General Funds			Ongoing
26	B			Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage

Village of Buda

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Pete De Freazer, Commissioner, 106 E. Main St., PO Box 65, Buda, IL 61314	Staff Time & copies and prints	General Funds	Zoning Office; Floodplain Manager/ESDA Coordinator provides information and education to the public through: speaking engagements at local civic groups, nursing homes, schools; senior citizen groups; newspaper articles; appearances on the local radio talk show "Open Line"; public service announcements on the local cable television channel. Also provides education to the public by organizing, hosting and promoting a yearly weather spotter training class taught by personnel from the National Weather Service.	The general public is aware of potential hazards, but many think that disaster / emergency situations always happen to someone else in some far away place. I believe that the yearly reminders about things like Lightning Safety, Winter Storm Awareness, Tornado Awareness, etc. helps to keep vital information fresh in their minds. Also, every year we have new people moving into our community who may not be aware of what to do or how to protect themselves and/or their property during a severe weather event.	Ongoing
5	C		Staff Time & copies and prints	General Funds			Ongoing
26	B			Staff Time	General Funds	Staff Time	NFIP participation and compliance; reduce flood damage and losses

Village of DePue							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Eric C. Bryant, Village Trustee, PO Box 1068, DePue, IL 61322	\$10,000	Grants	Village Staff	People in the area w/out a siren will be made aware of storms, fires, etc.	Ongoing
4	B		unknown				
8	C		reduced risk to the community, reduce property damage				
26	B		Staff Time	General Funds		Staff Time	

Village of LaMoille							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
14	C	Steve Sondgeroth 68 N. Main St., PO Box 466, LaMoille, IL 61330	Staff Time	General Funds	Village Staff	More Organized	Ongoing
22	E		Staff Time	General Funds	Staff Time	reduced risk to the community, reduce property damage	Ongoing
26	B		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

City of Princeton								
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline	
3	A	2 S. Main St., Princeton, IL 61356	New \$20,000	General Funds & Grant Funds	City Maintenance Staff	reduced risk to the community, reduce property damage	Ongoing	
5	A	Gary Hanna, Tom Root, Jeff Fiegenschuh 2 S. Main St., Princeton, IL 61356	Staff Time	General Funds	Information Sharing & City Staff	reduced risk to the community, reduce property damage	Yearly during relevant weeks	
9	C	2 S. Main St., Princeton, IL 61356	Staff Time	General Funds	City Staff	reduced risk to the community, reduce property damage	Monthly Meetings - Ongoing	
8	B	2 S. Main St., Princeton, IL 61356	Staff Time	General Funds	City Staff	reduced risk to the community, reduce property damage	Ongoing	
13	B	Jeff Fiegenschuh 2 S. Main St., Princeton, IL 61356	Staff Time	General Fund	Staff Time	reduced risk to the community, reduce property damage	Ongoing	
14	A		Staff Time	General Fund	Staff Time	reduced risk to the community, reduce property damage	Ongoing	
22	B		\$5,000/yr	Grants	Staff Time	Staff Time	reduced risk to the community, reduce property damage	Ongoing
26	B		Staff Time	General Funds	Staff Time	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

Village of Seatonville

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Chad Errico, 110 N. Center St., PO Box 27, Seatonville, IL 61359	Staff Time	General Funds	Village Staff	reduced risk to the community, reduce property damage	Ongoing
8	A	Zach Plym , 110 N. Center St., PO Box 27, Seatonville, IL 61359	Staff Time	General Funds	Village Staff	reduced risk to the community, reduce property damage	Ongoing
14	A	Bill Heltz , 110 N. Center St., PO Box 27, Seatonville, IL 61359	Staff Time	General Fund	Staff Time	reduced risk to the community, reduce property damage	Ongoing
26	B	Chad Errico, 110 N. Center St., PO Box 27, Seatonville, IL 61359	Unknown	General Funds	Staff Time	NRP participation and compliance, reduce flood damage and losses	As soon as possible

Village of Sheffield

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Kris Donarski, ESDA Coordinator, Room B-5, Courthouse, 700 S. Main St., Princeton, IL 61356	Staff Time & copies and prints	General Funds	Zoning Official Floodplain Manager/ESDA Coordinator provides information and education to the public through: speaking engagements at local civic groups, nursing homes, schools; senior citizen groups; newspaper articles; appearances on the local radio talk show "Open Line"; public service announcements on the local cable television channel. Also provides education to the public by organizing, hosting and promoting a yearly weather spotter training class taught by personnel from the National Weather Service.	The general public is aware of potential hazards, but many think that disaster / emergency situations always happen to someone else in some far away place. I believe that the yearly reminders about things like Lightning Safety, Winter Storm Awareness, Tornado Awareness, etc. helps to keep vital information fresh in their minds. Also, every year we have new people moving into our community who may not be aware of what to do or how to protect themselves and/or their property during a severe weather event.	Ongoing
5	C		Staff Time & copies and prints	General Funds			Ongoing
26	B		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

City of Spring Valley

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
2	D	Debb Ladgenski, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds	City Staff	reduced risk to the community, reduce property damage	Ongoing
5	A	Michael L. Miroux, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds	Information Sharing & City Staff	reduced risk to the community, reduce property damage	Yearly during relevant weeks
8	B	Debb Ladgenski, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds	City Staff	reduced risk to the community, reduce property damage	Ongoing
22	E	Debb Ladgenski, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds & Grants	City Staff	reduced risk to the community, reduce property damage	Immediately/ Ongoing
24	C	Michael L. Miroux, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds & Grants	City Staff	reduced risk to the community, reduce property damage	Ongoing
26	B	Debb Ladgenski, 215 N. Greenwood St., Spring Valley, IL 61362	Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

Village of Tiskilwa

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
13	A	Randy Philhower, President, PO Box 433, Tiskilwa, IL 61368	Staff time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
14	C		Staff time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
15	B		Staff time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
22	B		\$5,000/yr	Grants	Very Limited	reduced risk to the community, reduce property damage	Ongoing
24	B		Staff time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
26	B		Staff Time	General Funds	Staff Time	Staff Time	Maintain NFIP Compliance, Reduce flood damage

Village of Walnut

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Gary Brooks, Village President, 114 Jackson, PO Box 604, Walnut, IL 61376	Staff Time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
14	C		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing
26	B		Staff Time	General Funds	Staff Time	Staff Time	Maintain NFIP Compliance, Reduce flood damage

Marshall County							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Neil Pobanz, Marshall Co EMA, laconaero@aol.com	new \$20,000	Grants	Limited	reduced risk to community, decrease operational costs, reduce property damage	Immediately/ ongoing maintenance
5	C		Staff Time	General Funds	Information Sharing & County Staff	Informed community, reduced risk to the community, reduce property damage	Yearly during relevant weeks
26	B		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

City of Henry							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Daryl Fountain, City Mayor, 426 E. Park Row, PO Box 196, Henry, IL 61537	Staff Time	General Fund	City Staff	reduced risk to the community, reduce property damage	Ongoing
14	C		Staff Time	General Fund	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing
26	B		Staff Time	General Funds	Staff Time	Staff Time	Ongoing

City of Lacon							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Mike Hiehl, City Mayor, 406 5th St., Lacon, IL 61540	Staff Time	General Fund	City Staff	reduced risk to the community, reduce property damage	Ongoing
14	C		Staff Time	General Fund	State and Federal Assistance	NFIP participation and compliance, reduce flood damage and losses	As soon as possible
27	B		Unknown	Grant Funds	Staff Time	Staff Time	Ongoing

Village of Sparland

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	C	Roger Wilkinson, President, 123 Center St., PO Box 278, Spartan, IL 61565	Staff Time	General Fund	Village Staff	reduced risk to the community, reduce property damage	Ongoing
14	C						
26	B		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

City of Toluca

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Dave Dollinger, cityhall@maxis.com	\$3,000/yr	General Funds	Maintenance Energy Specialists	reduced risk to the community, reduce property damage	Test/mo - Ongoing
8	B		Staff Time/Fire Dept./ESDA	General Funds	City Staff, Manpower, Taxes	reduced risk to the community, reduce property damage	Monthly Meetings
5	B					reduced risk to the community, reduce property damage, Informed Staff & Community	Ongoing
9	C		Staff Time	General Funds	City Staff	reduced risk to the community, reduce property damage	Monthly Meetings - Ongoing
13	B			General Funds		reduced risk to the community, reduce property damage	Ongoing
14	C					reduced risk to the community, reduce property damage	Monthly Meetings
26	B		Staff Time	General Funds	Staff Time	Maintain NFIP Compliance, Reduce flood damage	Ongoing

City of Wenona

Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
13	E	Bill Simmons, City Administrator 226 S. Chestnut, PO Box 601, Wenona, IL 61377	Staff Time	General Funds	City Staff	More informed City Staff and better provided services	Ongoing
22	B			Grant Funds		Lower costs from less local flooding issues	Ongoing
26	B		Staff Time	General Funds	Staff Time	Staff Time	Maintain NFIP Compliance, Reduce flood damage

County of Stark							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	B	Fred Sans, County ESDA Coordinator, RR2, PO Box 133, Toulon, IL 61483	Staff Time	General Fund	County Staff	When hazards are prevalent	Ongoing
5	C		Staff Time			Keeping people informed about hazards	
26	B		Staff Time	General Funds	Staff Time	Maintain NFP Compliance, Reduce flood damage	Ongoing

Village of Bradford							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
1	B	Fred Sans, County ESDA Coordinator, RR2, PO Box 133, Toulon, IL 61483	Staff Time	General Fund	County & Village Staff	When hazards are prevalent	Ongoing
5	C		Staff Time			Keeping people informed about hazards	
26	B		Staff Time	General Funds	Staff Time	Maintain NFP Compliance, Reduce flood damage	Ongoing

Village of Lafayette							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	C	Carl Peve, Mayor, 610 Hodgson, PO Box 186, Lafayette, IL 61449	new \$20,000	Grants	Village Staff Time	reduced risk to the community, reduce property damage	As soon as possible
22	C		N/A			Grants	
26	B		Unknown	General Funds	Staff Time	Maintain NFP Compliance, Reduce flood damage	Ongoing

City of Toulon							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Fred Sans, County ESDA Coordinator, RR2, PO Box 133, Toulon, IL 61483	New \$20,000	Grant	Limited	reduced risk to community, decrease operational costs, reduce property damage	As soon as possible
1	B		Staff			General Fund	
5	C		Staff	General Fund	County & City Staff	Keeping people informed about hazards	Ongoing
26	B	Staff Time	General Funds	Staff Time	Staff Time	Maintain NFP Compliance, Reduce flood damage	Ongoing

City of Wyoming							
Action Item#	Priority A-E	Name/address/phone/e-mail of Responsible Person	Cost	Revenue Source	Resources	Benefits	Deadline
3	A	Steve Hansard Fred Sans, County ESDA Coordinator, RR2, PO Box 133, Toulon, IL 61483	New \$20,000	Grant	Limited	reduced risk to community, decrease operational costs, reduce property damage	As soon as possible
1	B		Staff			General Fund	
5	C		Staff	General Fund	County & City Staff	Keeping people informed about hazards	Ongoing
26	B	Staff Time	General Funds	Staff Time	Staff Time	Maintain NFP Compliance, Reduce flood damage	Ongoing