



DeKalb County All Hazards Mitigation Plan

**Update of the January 2008 DeKalb County
All Natural Hazards Mitigation Plan**

**Table of Contents
And
Executive Summary**

**DeKalb County Hazard Mitigation
Planning Committee**

June 2013



DeKalb County, Illinois

All Hazards Mitigation Plan

Update of the January 2008 DeKalb County
All Natural Hazards Mitigation Plan

DeKalb County
Hazard Mitigation Planning Committee

June 2013



This *All Hazards Mitigation Plan* was prepared with the technical support of Molly O'Toole & Associates, Ltd., 450 S. Stewart Avenue, Lombard, IL 60148-2851, molly@mollyotoole.com. Traci Lemay also contributed to the development and writing of the *Plan* as an intern from the Federal Emergency Management Agency's Emergency Management Institute.

DeKalb County All Hazards Mitigation Plan

Contents

January 2013 Agency Review Draft

Page Number:

Executive Summary	
Chapter 1. Introduction	1-1
1.1 Overview.....	1-1
1.2 Planning Approach	1-2
1.3 DeKalb County	1-6
1.4 DeKalb County Community Profile	1-6
1.5 Land Use and Development.....	1-12
1.6 Critical Facilities.....	1-12
1.7 References.....	1-15
Chapter 2. Hazard Identification & Profile	2-1
2.1 Hazard Identification	2-1
2.2 Natural Hazard Profile.....	2-6
2.2.1 Severe Summer Storms	2-6
2.2.2 Flood.....	2-10
2.2.3 Severe Winter Storms.....	2-20
2.2.4 Tornado.....	2-24
2.2.5 Extreme Cold.....	2-27
2.2.6 Extreme Heat	2-28
2.2.7 Drought.....	2-30
2.2.8 Other Natural Hazards	2-33
2.3 Manmade Hazard Profile.....	2-40
2.3.1 Radiological Release	2-40
2.3.2 Utility Interruption.....	2-41
2.3.3 Transportation Incident	2-42
2.3.4 Hazardous Material (HazMat) Incident.....	2-43
2.4 Summary – Hazard Identification & Profile.....	2-45
2.5 References.....	2-48
Chapter 3. Hazard Vulnerability Assessment	3-1
3.1 Assets and Property Value.....	3-1
3.2 Natural Hazard Vulnerability Assessment	3-5
3.2.1 Severe Summer Storms Assessment	3-5
3.2.2 Flood Vulnerability Assessment.....	3-5
3.2.3 Severe Winter Storms Vulnerability Assessment.....	3-9
3.2.4 Tornado Vulnerability Assessment	3-10
3.2.5 Extreme Cold Vulnerability Assessment.....	3-12
3.2.6 Extreme Heat and Drought Vulnerability Assessment.....	3-12

3.3 Summary	3-13
3.4 References.....	3-14
 Chapter 4. Goals	 4-1
4.1 Community Priorities.....	4-1
4.2 Plan Direction	4-2
4.3 Goals and Guidelines.....	4-3
4.4 County and Municipal Planning Goals.....	4-4
 Chapter 5. Preventive Measures	 5-1
5.1 Building Codes	5-1
5.2 Manufactured Homes	5-4
5.3 Planning and Zoning.....	5-5
5.4 Subdivision Regulations	5-7
5.5 Open Space Preservation	5-7
5.6 Floodplain and Stormwater Management.....	5-8
5.7 Hazard Mapping	5-9
5.8 Conclusions.....	5-10
5.9 Recommendations.....	5-11
5.10 References.....	5-12
 Chapter 6. Property Protection	 6-1
6.1 Keeping the Hazard Away.....	6-1
6.2 Retrofitting – Modify the Building.....	6-4
6.3 Insurance.....	6-7
6.4 The Government’s Role.....	6-9
6.5 Repetitive Flood Loss Areas.....	6-11
6.6 Conclusions.....	6-13
6.7 Recommendations.....	6-13
6.8 References.....	6-14
 Chapter 7. Structural Projects	 7-1
7.1 Reservoirs and Detention.....	7-2
7.2 Channel Improvements	7-3
7.3 Levees and Barriers	7-4
7.4 Crossings and Roadways	7-5
7.5 Drainage and Storm Sewer Improvements	7-7
7.6 Drainage System Maintenance	7-7
7.7 Conclusions.....	7-8
7.8 Recommendations.....	7-9
7.9 References.....	7-10
 Chapter 8. Resource Protection	 8-1
8.1 Wetland Protection	8-2
8.2 Erosion and Sediment Control.....	8-3
8.3 River Restoration	8-4
8.4 Best Management Practices.....	8-5
8.5 Dumping Regulations	8-6

8.6 Forestry 8-7
8.7 Farmland Protection..... 8-8
8.8 Historic and Natural Area Protection 8-9
8.9 Conclusions..... 8-11
8.10 Recommendations..... 8-11
8.11 References..... 8-12

Chapter 9. Emergency Services9-1
9.1 Threat Recognition 9-1
 9.1.1 Natural Hazards 9-1
 9.1.2 Manmade Hazards 9-3
9.2 Warning 9-7
9.3 Response 9-9
9.4 Critical Facilities Protection 9-11
9.5 Post Disaster Recovery and Mitigation 9-11
9.6 Conclusions..... 9-12
9.7 Recommendations..... 9-13
9.8 References..... 9-14

Chapter 10. Public Information10-1
10.1 Outreach Projects 10-1
10.2 Library and Web Sites 10-3
10.3 Technical Assistance 10-4
10.4 Real Estate Disclosure 10-5
10.5 Public Information Program Strategy 10-6
10.6 Conclusions..... 10-7
10.7 Recommendations..... 10-7
10.8 References..... 10-12

Chapter 11. Action Plan11-1
11.1 Action Plan Overview..... 11-1
11.2 Mitigation Action Items..... 11-2
11.3 Action Items Presented as “Community Specific Action Items” 11-15
11.4 Summary of Action Plan Items..... 11-20
11.5 Plan Implementation and Maintenance 11-21

Appendices

Appendix A – Planning Committee Participants

Appendix B – Public Involvement Activities

Appendix C – Community Resolutions (Examples)

List of Tables

1-1 DeKalb County Natural Hazard Mitigation Workgroup 1-3

1-2 DeKalb County Municipal Data 1-11

1-3 DeKalb County Township Data..... 1-11

1-4 DeKalb County Land Uses (2002) 1-12

1-5 DeKalb County Critical Facilities 1-13

2-1 State and Federal Disaster Declarations for DeKalb County 2-1

2-2 DeKalb County Identified and Potential Hazards 2-3

2-3 DeKalb County Ranking of Natural and Manmade Hazards 2-4

2-4 DeKalb County Committee Summary of Identified and Potential Hazards 2-5

2-5 DeKalb County Recorded Hail Events 2-8

2-6 DeKalb County 100-year Flood Elevations..... 2-10

2-7 DeKalb County Watersheds 2-11

2-8 DeKalb County Comparison of Flood Elevations 2-15

2-9 DeKalb County Recent Flood Events and Damage Estimates 2-18

2-10 DeKalb County Severe Winter Events 2-22

2-11 DeKalb County Tornadoes 2-25

2-12 Recent Earthquakes Felt in Illinois 2-36

2-13 Probability of Earthquake Events in The New Madrid Seismic Zone..... 2-38

2-14 DeKalb County Summary of Hazards Probability..... 2-45

2-15 DeKalb County Hazard Identification by Community and Township
for Natural Hazards 2-46

2-16 DeKalb County Hazard Identification by Community and Township for Manmade
Hazards 2-47

3-1 DeKalb County Estimate of Assets 3-1

3-2 Estimate of Housing Units per Community..... 3-2

3-3 Flood Insurance Policy Statistics..... 3-7

3-4 DeKalb County FEMA Repetitive Flood Loss Properties 3-7

3-5 DeKalb County Summary of Hazard Vulnerability 3-13

3-6 IEMA Hazard Rating for DeKalb County 3-13

5-1 Building Codes Used in DeKalb County 5-3

5-2 DeKalb County Planning and Land Use Ordinances 5-6

7-1 DeKalb County Bridges and Roadways 7-6

7-2 DeKalb County Highway Department Bridge/Culvert Drainage Improvements..... 7-6

8-1 DeKalb County Farmland..... 8-9

8-2 DeKalb County Historic and Natural Sites..... 8-9

9-1 DeKalb County Emergency Management Plans and Emergency Operations Plans9-10

10-1 DeKalb County Public Information Activities 10-2

10-2 DeKalb County Community Web Sites 10-4

10-3 DeKalb County Library Information 10-4

11-1 Action Items, Responsible Agencies and Deadlines..... 11-22

11-2 Action Items, Goals and Guidelines 11-23

11-3 Action Items and Recommendations 11-24

List of Figures

1-1 DeKalb County Base Map1-7
1-2 School Districts.....1-9
1-3 Drainage Districts1-10
1-4 DeKalb County Critical Facilities1-14
2-1 DeKalb County Recorded Hail Events (1950-2006)2-9
2-2 DeKalb County Major Watersheds.....2-12
2-3 DeKalb County 100-year Floodplains2-19
2-4 DeKalb County Recorded Tornado Events (1950-2006)2-26
2-5 Fatalities in Vehicle Crashes for DeKalb County.....2-43
3-1 Repetitive Flood Loss Properties Area Map.....3-8
8-1 2010 DeKalb County Unified Future Land Use Plan8-10

[This page intentionally left blank.]

Executive Summary

DeKalb County is subject to natural and manmade hazards. Severe storms and flooding impacted the County in 1973, 1974, 1996, 2007 and 2008, and caused substantial property damage. A blizzard struck in 1979 and a severe snow storm in 2011. A microburst in 1998 seriously injured 20 people. The *DeKalb County All Hazards Mitigation Plan* identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural and manmade hazards. The *Plan* focuses on the six major natural hazards facing DeKalb County:

- Severe summer storms
- Severe winter storms
- Floods
- Tornadoes
- Extreme cold events
- Extreme heat events

And four manmade hazards:

- Radiological release incidents
- Utility interruption
- Transportation related incidents
- Hazardous material incidents (HazMat)

This *Plan* fulfills the federal mitigation planning requirements, and provides the County and its municipalities and institutions with a blueprint for reducing the impacts of these natural and manmade hazards on people and property. This *Plan* meets the requirements for federal mitigation funds, according to Section 104 of the Disaster Mitigation Act of 2000 (42 USC 5165) and 44 CFR (Code of Federal Regulations) Part 201 for funding under the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation Program and the Hazard Mitigation Grant Program. This *Plan* also meets the requirements of Stafford Act (42 USC 5165) and 44 CFR Part 78.5 for FEMA's Flood Mitigation Assistance Program.

This *Plan* was prepared by the DeKalb County Hazards Mitigation Planning Committee, created by a resolution of the DeKalb County Board on September 20, 2006 and established by County resolution as a permanent committee in 2008. The Mitigation Committee's members include representatives of County offices, interested municipalities, educational institutions, and public and private stakeholder organizations.

The Mitigation Committee met annually after the development of the 2008 *Plan* and met three times in 2012, including a public meeting, to update the *Plan*. FEMA requires that hazard mitigation plans be updated every five years.



DeKalb County and the natural and manmade hazards that can impact the County have been assessed in Chapters 1 through 3. Goals and guidelines established by the Mitigation Committee are the focus of Chapter 4. Six mitigation strategies are the subjects of Chapters 5 through 10 in this *Plan*:

- Preventive
- Property protection
- Resource protection
- Emergency services
- Structural projects
- Public information

Chapter 11 presents the Action Plan for implementation of this *Plan*. The Action Plan was updated from the 2008 *Plan* and also includes items for plan maintenance.

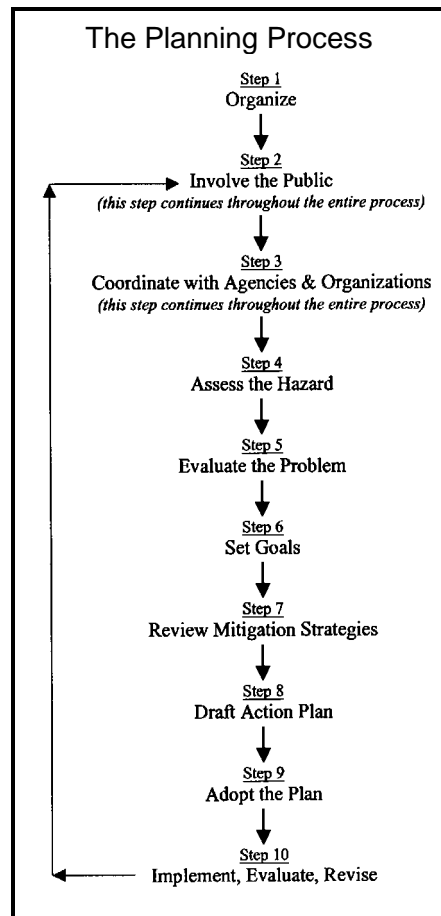
1. Introduction

DeKalb County is located in northern Illinois. The County Seat is Sycamore, Illinois, which is located approximately 50 miles west of Chicago. DeKalb County is 18 miles wide (east to west) and 36 miles long (north to south), and covers approximately 634 square miles. DeKalb County is comprised of 14 municipalities and 19 townships.

In 2000, DeKalb County had a population of 88,969, which was a decrease of 14 percent from the 1990 census. The 2005 population estimate was 97,635, which represents a growth of 9.7 percent. The 2000 census estimates that there are approximately 33,000 housing units in DeKalb County. The labor force is about 54,000 people and the college and university enrollment is over 36,000.

The Hazard Mitigation Planning Committee followed a standard 10-step process, based on guidance and requirements of the Federal Emergency Management Agency (FEMA). The Mitigation Committee met eight times from November 2006 through October 2007. It reviewed the hazards and their effects on people and property, considered a variety of ways to reduce and prevent damage, and recommended the most appropriate and feasible measures for implementation. Existing plans and programs were reviewed during the planning process. This *Plan* does not replace other planning efforts within the County or communities; this *Plan* complements those efforts.

The public was invited to participate through several concurrent means, including contact with Mitigation Committee members and their organizations, press releases provided to local newspapers, advertisement of Mitigation Committee meetings and posting of meeting minutes on DeKalb County’s website. A public meeting was held on November 13, 2012 at the DeKalb County Gathertorium.



DeKalb County critical facilities have been identified in this *Plan* and categorized as hazardous materials sites, health facilities (hospitals and nursing homes), emergency response facilities (police and fire stations, public works sites), utilities, schools, places of assembly, and bridges. Table 1-4 in Chapter 1 summarizes the County's critical facilities.

2. Hazard Analysis

The Mitigation Committee reviewed a wide range of natural and manmade hazards, and evaluated them based on what causes them, their likelihood of occurring, and their impact on people, animals, property, critical facilities, and the local economy. The information was based on available technical studies, reports by the participating agencies and communities on their past experiences.

Natural hazards were prioritized as severe winter storms, severe summer storms, extreme cold events, extreme heat events, tornadoes, and floods. Manmade hazards were prioritized as radiological release incidents, utility interruptions, transportation incidents, and HazMat incidents. The following table is from Chapter 2 and summarizes the natural and manmade hazards that are the focus of this *Plan*:

DeKalb County Summary of Hazard Probability

	Annual Chance	Impact	Square miles Affected	Safety Assessment
		Location		
Natural Hazards:				
Severe Summer Storms	100%	Countywide	10	High
Floods	1%	Floodplains	(Floodplain)	Medium
Severe Winter Storms	100%	Countywide	636	Medium
Tornadoes	40%	Countywide	636	High
	0.001%	Single Location	1	High
Extreme Cold	20%	Countywide	636	High
Extreme Heat	10%	Countywide	636	High
Drought	--	Countywide	636	Medium
Manmade Hazards:				
Radiological Incident	---	Region of County	50	High
Utility Interruption - Electrical	---	Region of County	200	Low
Utility Interruption - Communications	---	Region of County	200	Low
Utility Interruption - Natural Gas	---	Region of County	200	Medium
Transportation Incident - Air	---	Single Location	1	Medium
Transportation Incident - Rail	---	Single Location	1	Low
Transportation Incident - Truck	---	Single Location	1	Low
Hazardous Material Incident	---	Single Location	1	High

3. Hazard Vulnerability Assessment

The vulnerability assessment estimates the past and future hazard impacts, in terms of people and costs in DeKalb County. Impacts are summarized as damage to buildings,

damage to critical facilities, health and safety, and economic impact (damage to businesses and infrastructure).

4. Goals

The Mitigation Committee established the following hazard mitigation goals and guidelines for the planning process:

- The overall direction of this *Plan* can be summarized under the six goals established in Chapter 4:
- Goal 1. Protect the lives, health, and safety of the people and animals of DeKalb County from the impact and effects of natural and manmade hazards.
 - Goal 2. Protect public services and critical facilities from loss of use during, and potential damage from, natural and manmade hazard events.
 - Goal 3. Mitigate to protect against economic and transportation losses due to natural and manmade hazards.
 - Goal 4. Ensure that new developments do not create new exposures to damage from natural and manmade hazards.
 - Goal 5. Identify specific projects to protect lives and mitigate damage where cost-effective and affordable.
 - Goal 6. Protect historic, cultural, and natural resources from the effects of natural and manmade hazards.

- The seven guidelines from Chapter 4 set the direction or the strategy for the mitigation activities developed or recommended in Chapters 5 through 10. The guidelines also set the direction for the action items in this Chapter.
- Guideline 1. Focus natural hazards mitigation efforts on severe winter storms, severe summer storms, extreme cold and heat events, tornadoes, and floods.
 - Guideline 2. Focus manmade hazard mitigation efforts on radiological release incidents, utility disruption, and transportation related incidents.
 - Guideline 3. Make people aware of the hazards they face and focus mitigation efforts on measures that allow property owners, service providers, and pet owners to help themselves.
 - Guideline 4. Create and foster public-private partnerships to accomplish mitigation activities.
 - Guideline 5. Seek state, and federal support for mitigation efforts.
 - Guideline 6. Use available local funds, when necessary, to protect the public services, critical facilities, lives, health, and safety from natural and manmade hazards.
 - Guideline 7. Strive to improve and expand business, infrastructure, education and housing opportunities in DeKalb County in conjunction with planned mitigation efforts.

5. Preventive Measures

The Mitigation Committee reviewed a variety of mitigation measures to protect new construction from hazards and see that future development does not increase potential losses. It was concluded that all communities should, if not already, adopt the International Building Codes. Land use plans, zoning ordinances and subdivision standards could better address natural hazards.

6. Property Protection

Property protection measures are used to modify buildings or property subject to damage. Most measures are implemented by the property owners, so appropriate government activities include public information, technical assistance and financial support. Special attention should be given to repetitively flooded areas, including areas impacted by the August 2007 flood event, and safe rooms for tornadoes.

7. Structural Projects

The Mitigation Committee recommended that the County continue its efforts in the development of the countywide stormwater management program. The Mitigation Committee recommended setting criteria to ensure structural flood control projects do not adversely affect other properties or natural functions. It also recommended each community establish a formal and regular of drainage system maintenance program, and that the siltation of the South Branch and East Branch of the Kishwaukee River be addressed.

8. Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. They include preserving wetlands and farmland, erosion and sedimentation control, preventing dumping in streams and urban forestry. Urban forestry programs are encouraged to protect utility lines during wind and ice storms.

9. Emergency Services

Emergency services include threat recognition, warning, response, and recovery. The Mitigation Committee recommended making effective use of the County's GIS capabilities to better prepare for natural and manmade incidents. Outdoor warning systems are limited in the County and should be improved. The Mitigation Committee also recommended additional training for NIMS and emergency response.

10. Public Information

Public information is important for mitigation of all natural and manmade hazards. The Mitigation Committee identified numerous subject areas that would benefit from a public information program. The Mitigation Committee reviewed outreach projects, providing background information to libraries and on websites, and providing technical assistance. Top messages to convey were identified along with the types of media that should be used to convey those messages.

11. Action Plan

After a review of the recommendations from Chapters 5 through 10, the Mitigation Committee created an "Action Plan" that specifies recommended projects, who is responsible for implementing them, and when they are to be done. The Action Plan is included in Chapter 11 of this *All Hazards Mitigation Plan*. A table summarizing the action items and the responsible agencies is presented on page ES-7.

There are 23 action items. The first three action items are administrative in nature, but very important for the continued success of hazard mitigation in DeKalb County. These items call for the formal adoption of this *Plan* by the County and all municipalities and institutions, the continuation of the Hazards Mitigation Planning Committee, and plan maintenance procedures. Formal adoption ensures that County and municipal staffs are authorized and instructed to implement the action items. Adoption is also a requirement for recognition of the *Plan* by mitigation funding programs. The Mitigation Committee will provide the mechanism and a vehicle for the *Plan* to be implemented, monitored, evaluated and updated. The Mitigation Committee will provide a means for continued public involvement. The Mitigation Committee will report to the County Board annually, and a five year update to the *Plan* is required for FEMA's mitigation funding programs.

Twenty of the action items are mitigation program items. Most require staff time of the County and municipal staff. About eight of the action items identify funding needed from state and federal mitigation agencies. Several action items are public information activities. These items are aimed directly at the Mitigation Committee established planning guideline to make people aware of the hazards that they face.

Plan Adoption

This *Plan* serves to recommend mitigation measures. Implementation of these recommendations depends on adoption of this *Plan* by the DeKalb County Board and the city council or board of trustees of each participating municipality and institution. It also depends on the cooperation and support of the offices designated as responsible for each action item.

Formal adoption of the *Plan* ensures that County, municipal and institution staffs are authorized and instructed to implement the action items, as resources become available. Adoption is also a requirement for recognition of the *Plan* by mitigation funding programs.

The County and participating communities and schools should adopt this update of the *DeKalb County All Hazards Mitigation Plan* by passing a resolution.

Table 11-1 Action Items, Responsible Agencies and Deadlines

Responsible Agency	Administrative			Mitigation Program															Public Information				
	1. Plan Adoption	2. Hazard Mitigation Committee	3. Plan Maintenance and Monitoring	4. Building Code Improvements	5. Participation in StormReady	6. Critical Facility Design with All Hazards Protection	7. Mitigation of Floodplain Properties	8. Include the All Hazards Plan into Other Plans	9. NFIP Compliance	10. Grant Funding for Safe Rooms	11. Watershed Studies	12. Mapping of Hazards	13. Structural Flood Control Projects	14. Drainage System Maintenance	15. NOAA Weather Radios	16. Improved Threat Recognition	17. Improved Emergency Response	18. Property Protection Checklist	19. Information for Floodplain Property Owners	20. Educate Property Owners on Safe Rooms	21. Public Information - Hazard Mitigation Materials	22. Public Information - Outreach Projects	23. Property Protection References
Hazard Mitigation Committee			X															X	X	X	X	X	X
DeKalb County																							
County Board	X						X		X														
Administrator		X	X				X														X	X	X
ESDA		X	X		X	X	X							X	X			X		X	X	X	X
Planning & Zoning		X	X	X		X	X	X	X		X	X	X					X	X	X	X	X	X
Transportation						X	X																
GIS							X				X												
Health							X														X	X	X
Community Services							X														X	X	X
Municipalities																							
City Council/Village Board	X	X																					
Emergency Management		X	X		X	X	X	X	X	X				X	X			X		X	X	X	X
Designated department(s)		X	X	X	X	X	X	X	X	X	X		X	X				X	X	X	X	X	X
Institutions																							
Northern Illinois University	X	X		(x)	X	X		X	X					X	X	X	X			X	X	X	X
Kishwaukee College	X	X		(x)	X	X		X	X					X	X	X	X			X	X	X	X
Regional Office of Education	X	X	X	(x)		X		X	X										X	X	X	X	X
Townships		X	X										X								X	X	X
Other Agencies																							
Illinois Agencies						X						X											
American Red Cross																		X	X	X	X	X	X
Deadline for first product (months)	6	--	--	18	24	--	--	--	--	36	36	12	--	24	24	18	18	18	18	24	12	12	12

(x) Can be recommended

[This page intentionally left blank.]