


Contract Report 2008-05

# **Identification of Unmapped Special Flood Hazard Areas in Illinois**

by  
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**Prepared for the  
Illinois Department of Natural Resources,  
Office of Water Resources**

**June 2008**



Illinois State Water Survey  
Center for Watershed Science  
Champaign, Illinois

A division of the Illinois Department of Natural Resources  
and an affiliated agency of the University of Illinois



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# Identification of Unmapped Special Flood Hazard Areas in Illinois

## Introduction

The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRMs) depicting Special Flood Hazard Areas (SFHAs), which have a 1 percent chance of being inundated in any given year. The Flood Insurance Act of 1968 initiated the nationwide identification of SFHAs. The *Illinois Administrative Code* (1994) defines state oversight of floodways for streams that drain 10 square miles (sq. mi.) or more in rural areas or 1 sq. mi. or more in urban or urbanizing areas. Floodways are the channel, including on-stream lakes, and the portion of the floodplain adjacent to a stream or watercourse, which is needed to store and convey the existing 100-year frequency flood discharge. If the flow is confined to the floodway, there would occur no more than a 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a 10 percent increase in velocities. Floodways are generally depicted on the FEMA FIRMs. This general guidance has been used when developing Illinois FIRMs to identify streams that pose a flood hazard. However, many SFHAs for streams meeting these criteria have not been identified on Illinois FIRMs. There are streams in rural and urban areas meeting the criteria for which SFHAs have never been identified, and there are urban areas where community annexation is expanding into locations mapped according to rural criteria. Unmapped SFHAs pose a flood risk, which has never been communicated to the public, floodplain managers, or elected officials. In order to bridge this gap in Illinois, a screening process was developed, and streams that have a potential flood risk for which SFHAs have not been mapped were identified for each Illinois County.

This report contains maps of each of Illinois' 102 counties illustrating stream reaches with potential flood risk for which SFHAs had not been identified on FEMA FIRMs as of July 1, 2007. Maps are accompanied by tabular data providing stream names and number of unmapped stream miles.

The Federal Emergency Management Agency sponsored the initiative through the Map Modernization Management Support Best Practices Award for Federal Fiscal Year 2006, awarded to the Illinois Department of Natural Resources under Cooperating Technical Partner (CTP) Agreement EMC-2006-CA-7023.

## Study Approach

Two major factors were considered in identifying streams with potential flood risk: stream drainage area and land use in the vicinity (urban or rural). Existing FEMA floodplain maps were reviewed to identify streams meeting the criteria, but lacking SFHA designation.

Specific criteria used in this study followed FEMA guidelines and Illinois regulations. Criteria were applied using Geographic Information System (GIS) analytic and cartographic techniques.

## Drainage Area Criteria

Drainage area at any given point along a stream is a measurable factor in determining flood risk. However, the measured drainage area value may vary, depending on the data used. A statewide elevation data set was selected and coupled with a widely used GIS tool set, providing a consistent mechanism to identify cumulative drainage along individual streams.

A hydrologically corrected digital elevation model (DEM) was prepared from the U.S. Geological Survey (USGS) National Elevation Dataset of 30 meter DEMs (USGS, 2005). ArcHydro tools were used to evaluate flow direction and accumulation, thereby deriving a drainage network (ArcHydro, 2007). This network was stored as a shapefile called Statewide Streams. Stream reaches draining more than 1 sq. mi. and those draining 10 sq. mi. or more were identified throughout Illinois. The attribute field for drainage within the Statewide Streams shapefile was coded 10 for streams that drain 10 sq. mi. or more and 1 for streams that drain over 1 sq. mi. and less than 10 sq. mi.

## Urban Area Criteria

The *Illinois Administrative Code* (1994) and FEMA guidelines were reviewed; however, an urban or urbanizing area is not explicitly defined. Therefore, an objective, systematic approach based on population data and using GIS tools was developed to identify areas where SFHAs should be mapped for streams draining 1 sq. mi. or more, or 10 sq. mi. or more.

*Illinois Administrative Code* (1994) regulations apply to construction in the stream floodway serving a tributary area of 640 acres (1 sq. mi.) or more in an urban area, or in the floodway of any stream serving a tributary area of 6,400 acres (10 sq. mi.). A permit from the Illinois Department of Natural Resources (IDNR), Office of Water Resources, is required for construction in the floodway. Within the regulations urban is defined as "...areas of the State where residential, commercial or industrial development currently exists or, based on land use plans or controls, is expected to occur within 10 years of the application date. In determining urban areas, the Department will consider the expertise of local officials, regional and local planning commissions, city and county planners, or private development planners, as well as all available mapping. Areas with only isolated or widely scattered buildings will not be classified as urban areas" (*Illinois Administrative Code*, 1994).

FEMA *Guidelines and Specification for Flood Hazard Mapping Partners* (Section 1.2.3.3, April 2003) noted that streams draining 1 sq. mi. or more should be considered a potential flood risk in urban areas. FEMA, through Procedural Memorandum 38 (2005, re-issued October 17, 2007), adopted the risk classes based on population and growth potential provided in Table 1.

**Table 1. Risk Class Defined by FEMA PM38**

<i>Risk class</i>	<i>Characteristics</i>
A	High population and densities within the floodplain, and/or high anticipated growth.
B	Medium population and densities within the floodplain, and/or modest anticipated growth.
C	Low population and densities within the floodplain, small or no anticipated growth.
D	Undetermined risk, likely subject to flooding.
E	Minimal risk of flooding, area not studied.

Procedure Memorandum 38 charged FEMA regions to work with mapping partners to determine the appropriate stream risk classes. Illinois is in FEMA Region 5. A consistent method to identify risk classes for use in the six FEMA Region 5 states (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) was developed and adopted.

A systematic analysis of population density and growth in urban areas/clusters was used to identify risk classes. Using GIS tools and census tract data from 1990 and 2000 decennial censuses and the U.S. Census map of urban areas and clusters, a spatial data set of risk class areas was prepared (U.S. Department of Commerce, Census Bureau, 2002 and 2003). In this study, the spatial data set of Risk Class A, B, and C areas was used to represent urban and rural areas.

Initially, census tracts were ranked by population density and divided into tiers on a region-wide basis. The upper third of the tracts were placed in the highest tier, the lowest third by density were placed in the bottom tier, and the remaining tracts were placed in the middle tier. At this point in the analysis, the top tier was assigned to Risk Class A, the middle tier to Risk Class B, and the bottom tier to Risk Class C. Table 2 shows the initial breakdown of these tracts by area and population in Region 5.

FEMA guidelines specify that high-growth areas should also be included in the Risk Class A category. Population growth was addressed by examining data from 1990 and 2000 censuses. From 1990 to 2000, the United States population grew 13 percent. The population of the states within Region 5 grew about 6.5 percent during this same time period, and Illinois grew 8.7 percent.

**Table 2. Initial Risk Class Based on Population Density in Region 5**

<i>Risk class</i>	<i>Area (%)</i>	<i>Population (%)</i>
A	0.65	30.18
B	3.56	36.22
C	95.79	33.60

Census tracts that grew more than 26 percent, double the national growth rate, during this time period were classified as “high growth.” Census tracts that were below the average population density of the region (149 people/square mile) were excluded from the Risk Class A group to eliminate tracts where small populations increased by relatively small numbers. Additionally, tracts for which the 1990 population growth was zero were classified as zero growth. Based on these criteria, 9.52 percent of the population in Region 5 was living in high-growth areas in 2000. These areas represent 2.34 percent of the area within Region 5. High-growth areas that had been initially classified as Risk Class B or C on the basis of population density were reclassified as Risk Class A (Table 3).

A final adjustment to the assignment of risk classes was to consider urban areas and urban clusters defined by the 2000 census. For Census 2000, the Census Bureau classifies as “urban” all territory, population, and housing units located within an urbanized area (UA) or an urban cluster (UC). It delineates UA and UC boundaries to encompass densely settled territory, which consists of

- core census block groups or blocks that have a population density of at least 1,000 people per square mile; and
- surrounding census blocks that have an overall density of at least 500 people per square mile.

In addition, under certain conditions, less densely settled territory may be part of each UA or UC.

The Census Bureau’s classification of “rural” consists of all territory, population, and housing units located outside of UAs and UCs. The rural component contains both place and nonplace territory. Geographic entities, such as census tracts, counties, metropolitan areas, and the territory outside metropolitan areas, often are “split” between urban and rural territory, and the population and housing units they contain often are partly classified as urban and partly classified as rural (U.S. Department of Commerce, Census Bureau, 2003).

Many tracts which are low density, on average, include smaller towns that should be Risk Class B. To correct for this, the urban areas map was merged with the census tract map. Class C areas that fell within the limits of urban areas or urban clusters, as defined by the Census, were changed to Risk Class B. In Illinois more area and population were assigned higher risk classes than the region average. Exact population statistics cannot be given at this step in the process, as census tracts were subdivided into different risk classes.

The population in each risk class in Illinois was estimated by intersecting risk class boundaries with census block centroid populations, totaling the population occurring within each risk class divided by the total population of the state. Land area proportions were similarly determined by summarizing the area by risk classes and determining the proportion for each of the total land area of Illinois. The results are shown in Table 4.



**Table 3. Risk Class Adjusted for Growth Rate in Region 5**

<i>Risk class</i>	<i>Area (%)</i>	<i>Population (%)</i>
A	2.96	38.81
B	2.90	30.66
C	94.14	30.53

**Table 4. Estimates for Final Risk Classes in Illinois**

<i>Risk class</i>	<i>Area (%)</i>	<i>Population (%)</i>
A	3.5	56
B	4.8	33
C	91.7	11

### Mapped SFHAs

Stream reaches that already have mapped SFHAs were identified using digital floodplain data when available. Digital Flood Insurance Rate Maps (DFIRMs) have been prepared for Cook, DeKalb, DeWitt, Champaign, Clark, Clinton, Jackson, Kane, Kendall, Livingston, McLean, Rock Island, Sangamon, Union, and Williamson Counties, and these digital SFHAs were used. FEMA created digital floodplain vector data (Q3 data) by scanning paper FIRMS. Illinois has Q3 data for 28 counties as well as a historical spatial data set developed by the IDNR/Illinois State Water Survey (ISWS) for all SFHAs in unincorporated areas statewide. SFHAs in incorporated areas were digitized from FIRMs to supplement the historical IDNR/ISWS data as needed. These data constitute the available SFHA data.

### Methodology

Spatial data sets previously described, including risk classes, statewide streams, and SFHA data, were used in the screening process.

A shapefile created includes streams in Risk Class A that drain more than 1 sq. mi. and streams in Risk Classes B and C that drain more than 10 sq. mi. ESRI ArcGIS tools “Select by Attribute” and “Select by Location” were used to eliminate streams in Risk Classes B and C that drain less than 10 sq. mi.

The “Select by Location” tool was used to mask stream reaches that intersect with SFHA data. There were some differences between the statewide streams network layer created for this study derived from DEMs using ArcHydro tools and stream locations shown on various base maps used to prepare FIRMs showing SFHAs. As a result, some fragments of stream reaches were incorrectly classified as streams having potential risk and lacking SFHAs. An on-screen visual quality assurance review was performed, and each stream was assessed individually to determine its correct classification.

Once the unstudied risk streams were identified, stream names from the U.S. Geological Survey digital raster graphics (DRGs) were added to the digital data (USGS, 1998). Three shapefiles were developed: Streams of Potential Flood Risk in Class A, Streams of Potential Flood Risk in Class B, and Streams of Potential Flood Risk in Class C then combined in one file named Streams without SFHAS.

A map for each Illinois county was prepared showing stream reaches identified as having a potential flood risk, but lacking SFHA designation (Appendix B). Maps were prepared using the following data layers: Streams without SFHAs, Statewide Streams, Municipal Boundaries, County Boundaries, Interstate Highways, U.S. Highways, State Routes, Roads, Risk Class A, Risk Class B, and Risk Class C.

### Benefits

Tabular data (Appendix A) and maps (Appendix B) identifying streams with unmapped SFHAs have both an immediate and long-term value. This information provides much-needed guidance on as yet unmapped flood hazards. It highlights potential flood hazards in the environs of expanding urban areas providing essential information to floodplain managers and planners in the following ways:

- Counties scheduled for floodplain map updates will be able to use the information to identify mapping needs as part of the Map Modernization validation process.
- City/regional planners will be able to reference these illustrations when creating long-term land-use plans.
- City/regional planners and developers will be able to use the illustrations in site location analyses and identification of flood study needs prior to development.
- Local floodplain administrators will be able to use the illustrations to locate and submit mapping needs for these streams.
- The information can be used to assess and prioritize the mapping needs of each county.

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**Appendix A. Streams Without SFHAs**



**Appendix A. Streams Without SFHAs**

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>	<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
				Bureau	Unknown	4.73	C
				Bureau	Unknown	7.58	C
				Calhoun	None	0.00	NA
Adams	Cedar Creek	1.64	C	Carroll	Eagle Creek	1.72	C
Adams	Crooked Neck Creek	2.47	C	Carroll	East Johnson Creek	2.96	C
Adams	Fishhook Creek	4.62	C	Carroll	Johnson Creek	0.92	C
Adams	Grindstone Creek	1.19	C	Carroll	Lost Creek	1.16	C
Adams	Honey Creek	2.66	C	Carroll	Otter Creek	1.08	C
Adams	Little Creek	1.20	C	Carroll	Straddle Creek	4.76	C
Adams	McKee Creek	2.45	C	Cass	Clary Creek	2.01	C
Adams	Mill Creek	5.02	C	Cass	Lost Creek	2.56	C
Adams	Missouri Creek	1.66	C	Cass	Middle Creek	4.38	C
Adams	North Branch McKee Creek	0.74	C	Cass	Old Channel Mud Creek	3.07	C
Adams	Pigeon Creek	5.28	C	Cass	Unknown	0.73	B
Adams	Rock Creek	4.41	C	Champaign	Camp Creek	2.46	C
Adams	South Fork Bear Creek	8.19	C	Champaign	East Lake Fork	4.82	C
Adams	Thurman Creek	1.83	C	Champaign	Kankakee Drainage Ditch	2.20	C
Adams	Tourneal Creek	5.46	C	Champaign	Saline Branch	1.03	C
Adams	Unknown	1.31	C	Champaign	Twomile Slough	1.59	C
Adams	Ursa Creek	0.42	C	Champaign	Union Drainage Ditch	0.55	C
Adams	Walnut Fork	1.30	C	Champaign	Unknown	0.59	C
Adams	White Creek	0.60	C	Christian	Bear Creek	3.96	C
Alexander	None	0.00	NA	Christian	Big George Branch	3.92	C
Bond	None	0.00	NA	Christian	Brush Creek	0.41	C
Boone	Unknown	0.77	A	Christian	Buckhard Creek	0.44	C
Boone	Unknown	1.36	A	Christian	Clear Creek	2.35	C
Boone	Unknown	0.60	A	Christian	Cotton Creek	2.21	C
Boone	Unknown	1.12	A	Christian	Locust Creek	2.42	C
Boone	Unknown	0.39	A	Christian	Main Drainage Ditch	7.31	C
Brown	Camp Creek	3.26	C	Christian	Mosquito Creek	1.04	C
Brown	Dry Fork	7.73	C	Christian	Prairie Fork	1.08	C
Brown	Little Creek	1.57	C	Christian	South Fork Sangamon River	2.15	C
Brown	Little Missouri Creek	0.95	C	Christian	Unknown	1.82	C
Brown	Logan Creek	1.75	C	Christian	Unknown	2.03	C
Brown	Missouri Creek	4.51	C	Christian	Unknown	2.78	C
Brown	Unknown	0.35	A	Clark	Lambs Branch	0.86	C
Brown	Unknown	0.45	A	Clark	Quarry Branch	0.89	C
Brown	West Creek	3.00	A	Clark	Willow Creek	1.84	C
Brown	West Creek	1.77	C	Clay	Buck Creek	0.60	C
Bureau	Brush Creek	8.61	C	Clay	Crooked Creek	3.20	C
Bureau	East Bureau Creek	5.85	C	Clay	Elm Creek	1.98	C
Bureau	Fairfield Ditch No. 1	0.87	C	Clay	Raccoon Creek	0.30	C
Bureau	Fairfield Union Special Ditch	0.81	C	Clay	Sutton Creek	0.75	C
Bureau	Negro Creek	0.55	C	Clinton	None	0.00	NA
Bureau	Pike Creek	0.87	C	Coles	Crabapple Creek	2.78	C
Bureau	Pond Creek	0.47	C	Coles	Donica Creek	2.03	C
Bureau	Unknown	1.54	C				

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>	<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Coles	East Branch Hurricane Creek	0.45	C	Douglas	Deer Creek	3.52	C
Coles	East Donica Creek	0.77	C	Douglas	Unknown	1.35	C
Coles	Flat Branch	2.59	C	Douglas	Unknown	0.79	C
Coles	Greasy Creek	2.66	C	DuPage	None	0.00	NA
Coles	Indian Creek	0.96	C	Edgar	Clear Creek	1.04	C
Coles	Little Wabash River	3.88	C	Edgar	Ditch No. 2	4.06	C
Coles	Polecat Creek	0.74	C	Edgar	East Donica Creek	1.98	C
Coles	Polecat Creek	0.50	C	Edgar	Hickory Grove Creek	3.38	C
Coles	Riley Creek	1.84	C	Edgar	Salt Fork	4.33	C
Coles	West Branch Hurricane Creek	0.87	C	Edgar	South Fork Brouilletts Creek	8.17	C
Cook (North)	Unknown	1.11	A	Edgar	Sugar Creek	0.94	C
Cook (North)	Unknown	0.65	A	Edgar	Unknown	0.69	C
Cook (South)	Unknown	0.69	A	Edgar	Unknown	0.45	C
Crawford	Bennett Creek	2.20	C	Edgar	West Fork Big Creek	1.74	C
Crawford	Big Creek	0.61	C	Edwards	Crooked Creek	0.72	C
Crawford	Big Creek	2.14	C	Edwards	Village Creek	0.23	C
Crawford	Dogwood Creek	3.23	C	Effingham	Bishop Creek	0.36	C
Crawford	Honey Creek	1.42	C	Effingham	Fulfer Creek	1.26	C
Crawford	Hutson Creek	0.87	C	Effingham	Little Salt Creek	0.64	C
Crawford	Lamotte Creek	2.90	C	Fayette	Camp Creek	2.08	C
Crawford	Maple Creek	0.61	C	Fayette	Cedar Creek	0.68	C
Crawford	South Fork Raccoon Creek	3.13	C	Fayette	Dismal Creek	2.28	C
Crawford	Unknown	0.46	A	Fayette	Dry Fork	0.57	C
Crawford	Unknown	4.19	C	Fayette	Flat Creek	1.30	C
Cumberland	Bear Creek	1.45	C	Fayette	Hoffman Creek	0.37	C
Cumberland	Bush Creek	1.66	C	Fayette	Little Creek	0.43	C
Cumberland	Clear Creek	1.52	C	Fayette	Lone Grove Branch	0.70	C
Cumberland	Cottonwood Creek	0.70	C	Fayette	Raccoon Creek	0.96	C
Cumberland	Muddy Creek	1.72	C	Fayette	Richland Creek	0.72	C
Cumberland	Mule Creek	0.89	C	Fayette	Sugar Creek	0.88	C
Cumberland	Ranger Creek	1.29	C	Ford	Big Four Ditch	13.89	C
Cumberland	Spring Point Creek	1.35	C	Ford	Drummer Creek	3.50	C
DeKalb	Buck Branch	0.60	C	Ford	Ford Special Drainage Ditch	2.41	C
DeKalb	East Branch	1.06	C	Ford	Kelly Creek	0.58	C
DeKalb	Indian Creek	5.46	C	Ford	Mackinaw River	1.70	C
DeKalb	Kingsbury Creek	1.33	C	Ford	North Fork Vermillion River	5.21	C
DeKalb	Owens Creek	0.56	C	Ford	Spoil Bank	1.08	C
DeKalb	Paw Paw Run	1.95	C	Ford	Unknown	1.46	C
DeKalb	South Branch Kishwaukee River	3.28	C	Ford	Wall Town Ditch	11.21	C
DeKalb	Unknown	1.22	C	Franklin	None	0.00	NA
DeWitt	Friends Creek Ditch	3.34	C	Fulton	Aylesworth Branch	0.91	C
DeWitt	Tenmile Creek	0.43	C	Fulton	Barker Creek	3.83	C
DeWitt	Trenkle Slough	0.52	C	Fulton	Big Sister Creek	1.30	C
DeWitt	Unknown	0.38	C	Fulton	Buckheart Creek	2.46	C
DeWitt	Unknown	0.49	C	Fulton	Duck Creek	3.36	C
DeWitt	Unknown	1.22	C	Fulton	Jake Creek	0.36	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Fulton	Little Sister Creek	0.61	C
Fulton	Shaw Creek	1.27	C
Fulton	South Branch	1.42	C
Fulton	South Fork	1.42	C
Fulton	Sugar Creek	2.32	C
Fulton	Swan Creek	1.27	C
Fulton	West Branch	5.55	C
Fulton	Wilson Creek	2.29	C
Gallatin	None	0.00	NA
Greene	Bear Creek	2.60	C
Greene	Coal Creek	0.50	C
Greene	Coates Creek	2.66	C
Greene	Hurricane Creek	2.94	C
Greene	Little Sandy Creek	0.49	C
Greene	Marks Creek	0.41	C
Greene	Seminary Creek	2.02	B
Greene	Whitaker Creek	3.07	C
Greene	Wines Branch	1.21	C
Grundy	Bills Run	2.74	C
Grundy	Hog Run	6.47	C
Grundy	Johnny Run	0.72	C
Grundy	Mazon River	1.39	C
Grundy	Nettle Creek	2.95	C
Grundy	Reddick Run	0.59	C
Grundy	Reddick Run	3.25	C
Grundy	Saratoga Creek	0.18	C
Grundy	Unknown	0.21	C
Grundy	Unknown	1.32	C
Hamilton	None	0.00	NA
Hancock	South Branch La Moine River	0.88	C
Hardin	None	0.00	NA
Henderson	Dugout Creek	5.66	C
Henderson	Fall Creek	1.76	C
Henderson	Jinks Hollow	3.72	C
Henderson	Old Tom Creek	2.00	C
Henderson	Smith Creek	2.79	C
Henderson	South Fork	1.14	C
Henderson	Unknown	0.72	C
Henderson	Unknown	2.13	C
Henry	Big Slough Ditch	8.68	C
Henry	Dugout Creek	0.61	C
Henry	Edwards River	3.13	C
Henry	Goose Creek	0.60	C
Henry	Indian Creek	2.51	C
Henry	King Creek	0.39	C
Henry	Kuhn Ditch No. 2	1.37	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Henry	Mineral Creek	3.16	C
Henry	Mosquito Creek	2.66	C
Henry	Mud Creek	22.61	C
Henry	Spring Creek	2.92	C
Henry	Unknown	1.04	C
Henry	Unknown	1.22	C
Henry	Walker Creek	3.30	C
Iroquois	Beaver Creek	5.70	C
Iroquois	Coon Creek	0.87	C
Iroquois	Fountain Creek	5.53	C
Iroquois	Gay Creek	4.19	C
Iroquois	Jefferson Creek	0.54	C
Iroquois	Langan Creek	3.38	C
Iroquois	Langan Creek	12.83	C
Iroquois	Little Beaver Creek	0.47	C
Iroquois	Little Beaver Creek	4.97	C
Iroquois	Louis Creek	5.53	C
Iroquois	Martinton Ditch No. 3	4.82	C
Iroquois	Pigeon Creek	4.18	C
Iroquois	Pike Creek	6.90	C
Iroquois	Possum Trot Ditch	3.52	C
Iroquois	Prairie Creek	5.54	C
Iroquois	Shavetail Creek	4.78	C
Iroquois	Spoil Bank	1.56	C
Iroquois	Spring Creek	16.42	C
Iroquois	Unknown	2.33	C
Iroquois	Unknown	1.86	C
Iroquois	Unknown	2.35	C
Iroquois	Unknown	0.33	C
Iroquois	Unknown	3.19	C
Iroquois	Unknown	1.79	C
Iroquois	Unknown	1.14	C
Iroquois	Unknown	1.60	C
Iroquois	Unknown	4.28	C
Iroquois	Unknown	5.11	C
Iroquois	Unknown	0.87	C
Iroquois	Unknown	0.45	C
Iroquois	Unknown	0.53	C
Iroquois	Whisky Creek	8.16	C
Jackson	None	0.00	NA
Jasper	Crooked Creek	4.37	C
Jasper	Island Creek	2.08	C
Jasper	Laws Creek	1.89	C
Jasper	Unknown	1.89	C
Jefferson	Puncheon Creek	4.45	C
Jersey	De Arcy Branch	2.27	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>	<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Jersey	Little Piasa Creek	0.95	C	Knox	Fitch Creek	5.60	C
Jersey	Phils Creek	3.63	C	Knox	Forman Creek	4.54	C
Jersey	Piasa Creek	7.15	C	Knox	Gale L Court Creek	1.43	C
Jersey	Unknown	2.86	C	Knox	Henderson Creek	2.06	C
JoDaviess	Yellow Creek	1.49	C	Knox	Mud Run	2.59	C
Johnson	Cedar Creek	1.50	C	Knox	North Creek	3.54	C
Johnson	Little Cache Creek	7.83	C	Knox	Spoon Lake	3.89	C
Kane	Jelkes Creek	0.67	A	Lake	Pettibone Creek	0.62	A
Kane	Unknown	0.45	A	Lake	Unknown	2.28	A
Kane	Unknown	0.50	A	Lake	Unknown	0.57	A
Kane	Unknown	0.43	A	Lake	Unknown	0.85	A
Kane	Unknown	0.43	A	Lake	Unknown	2.23	A
Kankakee	Bull Creek	1.06	C	Lake	Unknown	0.62	A
Kankakee	Crane Creek	10.93	C	Lake	Unknown	0.93	A
Kankakee	East Branch Horse Creek	11.01	C	Lake	Unknown	1.11	A
Kankakee	Gar Creek Ditch	1.06	C	Lake	Unknown	0.19	A
Kankakee	Granary Creek	1.21	C	Lake	Unknown	0.27	A
Kankakee	Horse Creek	3.80	C	Lake	Waukegan River	3.57	A
Kankakee	Leigh Raymond Run	1.40	C	LaSalle	Bailey Creek	8.12	C
Kankakee	Little Beaver Creek	3.81	C	LaSalle	Brumbach Creek	0.86	C
Kankakee	Mazon River	0.58	C	LaSalle	Buck Creek	1.63	C
Kankakee	Minnie Creek	5.69	C	LaSalle	Cedar Creek	6.46	C
Kankakee	North Branch Horse Creek	1.33	C	LaSalle	Covel Creek	0.69	C
Kankakee	Reddick Run	1.89	C	LaSalle	Crookedleg Creek	7.19	C
Kankakee	Soldier Creek	3.38	C	LaSalle	Drainage Ditch	2.47	C
Kankakee	South Branch Horse Creek	0.12	C	LaSalle	Little Sandy Creek	3.17	C
Kankakee	Spring Creek	2.80	C	LaSalle	Long Point Creek	4.30	C
Kankakee	Unknown	0.64	C	LaSalle	Mission Creek	0.79	C
Kankakee	Unknown	0.56	C	LaSalle	Otter Creek	1.37	C
Kankakee	West Branch Horse Creek	13.11	C	LaSalle	Paw Paw Run	1.05	C
Kendall	East Aux Sable Creek	0.56	A	LaSalle	Pecumsaugan Creek	1.27	C
Kendall	Morgan Creek	3.42	A	LaSalle	Prairie Creek	4.68	C
Kendall	Rob Roy Creek	8.71	A	LaSalle	Roods Creek	3.70	C
Kendall	Roods Creek	1.17	C	LaSalle	Sandy Creek	2.68	C
Kendall	Unknown	1.74	A	LaSalle	Spring Creek	8.60	C
Kendall	Unknown	1.27	A	LaSalle	Tomahawk Ditch	3.43	C
Kendall	Unknown	0.64	A	LaSalle	Unknown	2.96	C
Kendall	Unknown	0.39	A	LaSalle	Unknown	1.02	C
Kendall	Unknown	1.56	A	LaSalle	Unknown	0.64	C
Kendall	Unknown	0.23	A	LaSalle	Vermillion Creek	8.10	C
Kendall	Unknown	0.72	A	LaSalle	Waupecan Creek	0.54	C
Kendall	Unknown	1.60	A	LaSalle	Wolf Creek	1.75	C
Kendall	Unknown	0.30	A	Lawrence	Big Slough	8.39	C
Kendall	Unknown	1.51	A	Lee	Big Bureau Creek	0.76	C
Knox	Brandywine Creek	0.55	C	Lee	Franklin Creek	3.92	C
Knox	Brush Creek	4.63	C	Lee	Howland Creek	1.69	C



<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Lee	Main Ditch	2.59	C
Lee	Pike Creek	1.00	C
Lee	Unknown	0.52	C
Lee	Willow Creek	1.87	C
Livingston	Broughton Creek	6.36	C
Livingston	Eagle Creek	2.70	C
Livingston	Fivemile Creek	3.30	C
Livingston	Gooseberry Creek	2.56	C
Livingston	Gooseberry Creek	1.61	C
Livingston	Indian Creek	2.48	C
Livingston	Moon Creek	1.66	C
Livingston	Mud Creek	0.88	C
Livingston	Prairie Creek	2.76	C
Livingston	Reddick Run	1.07	C
Livingston	South Fork Vermilion River	2.70	C
Livingston	Unknown	0.56	C
Livingston	Unknown	1.14	C
Livingston	Unknown	1.13	C
Livingston	West Fork Mazon River	5.36	C
Logan	Deer Creek	2.43	C
Logan	Prairie Creek	4.65	C
Logan	Unknown	1.08	C
Logan	Unknown	0.55	C
Macon	South Fork Lake Fork	2.04	C
Macon	Willow Branch	3.26	C
Macoupin	Bear Creek	3.18	C
Macoupin	Cahokia Creek	6.57	C
Macoupin	Coop Branch	9.20	C
Macoupin	Dry Fork	0.31	C
Macoupin	East Fork Otter Creek	1.99	C
Macoupin	East Fork Wood River	0.50	C
Macoupin	Girder Branch	2.91	C
Macoupin	Honey Creek	5.41	C
Macoupin	Honeycut Branch	0.58	C
Macoupin	Horse Creek	1.41	C
Macoupin	Horse Creek	2.44	C
Macoupin	Hurricane Creek	5.32	B
Macoupin	Joes Creek	3.95	C
Macoupin	Lick Creek	1.70	C
Macoupin	Macoupin Creek	1.49	C
Macoupin	Nassa Creek	1.94	C
Macoupin	Otter Lake	4.44	C
Macoupin	Shaw Point Branch	4.43	C
Macoupin	Shearles Branch	5.13	C
Macoupin	Solomon Creek	2.30	C
Macoupin	Spanish Needle Creek	1.34	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Macoupin	Unknown	1.70	C
Macoupin	Unknown	0.86	C
Madison	Judys Branch	2.72	A
Madison	Little Piasa Creek	1.04	B
Madison	Little Silver Creek	3.44	C
Madison	Shields Branch	0.84	A
Madison	Unknown	0.45	A
Madison	Unknown	2.07	A
Madison	Unknown	2.58	A
Madison	Unknown	1.47	A
Madison	Unknown	0.58	A
Madison	Unknown	1.26	A
Madison	Unknown	0.47	A
Marion	Dums Creek	17.23	C
Marion	South Creek	0.51	C
Marion	Turkey Creek	1.82	C
Marshall	Judd Creek	3.23	C
Marshall	Pigeon Creek	0.38	C
Marshall	Run Brown Run	1.43	C
Marshall	Sandy Creek	2.60	C
Marshall	Shaw Creek	4.40	C
Marshall	Strawn Creek	0.75	C
Marshall	Unknown	1.16	C
Mason	Allens Grove Ditch	1.21	C
Mason	Fish Creek	8.17	C
Mason	Furrer Ditch	3.92	C
Mason	Jordan Creek	6.82	C
Mason	Long Branch	1.95	C
Mason	Main Ditch	3.40	C
Mason	Red Oak Ditch	4.16	C
Mason	Sleepy Hollow Ditch	2.66	C
Mason	Unknown	1.92	C
Mason	Unknown	2.95	C
Mason	Waldmeier Ditch	0.97	C
Mason	White Oak Creek	3.37	C
Massac	None	0.00	NA
McDonough	East Fork La Moine River	1.75	A
McHenry	Kishwaukee River	0.70	A
McHenry	Unknown	0.37	A
McHenry	Unknown	1.56	A
McHenry	Unknown	0.24	A
McHenry	Unknown	0.51	A
McHenry	Unknown	2.05	A
McHenry	Unknown	0.74	A
McHenry	Unknown	0.61	A
McHenry	Unknown	1.26	A

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>	<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
McHenry	Unknown	0.75	A	Piatt	Goose Creek	4.37	C
McLean	Crooked Creek	0.92	C	Piatt	Goose Creek	4.35	C
McLean	Unknown	1.74	C	Piatt	Kankakee Drainage Ditch	3.04	C
McLean	Unknown	1.45	C	Piatt	Lake Fork	1.87	C
McLean	Unknown	1.11	C	Piatt	Trenkle Slough	3.13	C
Menard	Lake Petersburg	0.86	A	Piatt	Unknown	3.85	C
Menard	Unknown	0.61	A	Piatt	Unknown	0.75	C
Menard	Unknown	0.16	A	Pike	Bay Creek	8.74	C
Menard	Unknown	0.33	A	Pike	Beebe Creek	3.45	C
Menard	Unknown	0.25	A	Pike	Blue Creek	7.24	C
Mercer	Eliza Creek	8.46	C	Pike	Dutch Creek	6.43	C
Mercer	North Henderson Creek	0.69	C	Pike	East Branch Kiser Creek	2.71	C
Mercer	Sturgeon Bay	1.41	C	Pike	Fishhook Creek	0.86	C
Monroe	South Fork Horse Creek	2.59	C	Pike	Hadley Creek	12.62	C
Montgomery	Fox Hollow	0.93	C	Pike	Honey Creek	3.72	C
Montgomery	Horse Creek	0.81	C	Pike	Horton Creek	1.93	C
Montgomery	Little Creek	0.34	C	Pike	Kiser Creek	11.52	C
Montgomery	Middle Fork Shoal Creek	3.58	C	Pike	Little Blue Creek	2.62	C
Montgomery	Shop Creek	0.84	C	Pike	McCranney Creek	7.30	C
Morgan	Unknown	2.23	C	Pike	McKee Creek	0.94	C
Moultrie	Jonathan Branch	1.09	C	Pike	Middle Fork McKee Creek	9.77	C
Moultrie	Twomile Branch	0.36	C	Pike	Pigeon Creek	2.21	C
Moultrie	Unknown	0.80	C	Pike	Sixmile Creek	9.82	C
Ogle	Buffalo Creek	2.00	B	Pike	South Fork McKee Creek	7.18	C
Ogle	Clear Creek	2.57	C	Pike	Unknown	1.00	C
Ogle	Coon Creek	0.40	C	Pope	None	0.00	NA
Ogle	Fivemile Creek	2.00	C	Pulaski	None	0.00	NA
Ogle	Honey Creek	0.38	C	Putnam	Unknown	0.84	C
Ogle	Leaf River	1.62	C	Randolph	None	0.00	NA
Ogle	Mud Creek	1.47	C	Richland	None	0.00	NA
Ogle	Sevenmile Branch	1.73	C	Rock Island	Case Creek	3.83	B
Ogle	Silver Creek	1.08	C	Rock Island	Coal Creek	0.99	B
Ogle	Spring Run	0.30	C	Saline	None	0.00	NA
Ogle	Unknown	2.21	C	Sangamon	Brush Creek	0.41	C
Ogle	Unknown	0.76	C	Sangamon	Clear Creek	1.25	C
Ogle	Unknown	1.84	C	Sangamon	Fancy Creek	2.25	C
Peoria	None	0.00	NA	Sangamon	Hunter Slough	2.36	C
Perry	Bonnie Creek	3.13	C	Sangamon	Sugar Creek	0.32	C
Perry	Galum Creek	0.84	C	Sangamon	Unknown	1.05	C
Perry	Hog Creek	0.84	C	Schuyler	Bauer Branch	0.62	C
Perry	Little Beaucoup Creek	0.73	C	Schuyler	Brushy Creek	1.46	C
Perry	Panther Creek	1.74	C	Schuyler	Cedar Creek	11.66	C
Perry	Swanwick Creek	3.37	C	Schuyler	Crane Creek	5.99	C
Piatt	Ditch No. 3	5.71	C	Schuyler	East Fork Crane Creek	1.89	C
Piatt	East Lake Fork	0.89	C	Schuyler	Flour Creek	4.72	C
Piatt	Friends Creek Ditch	3.17	C	Schuyler	Harris Branch	2.45	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Schuyler	Horney Branch	0.34	C
Schuyler	McKee Branch	0.80	C
Schuyler	Missouri Creek	5.12	C
Schuyler	South Fork Cedar Creek	2.06	C
Schuyler	Stoney Creek	2.26	C
Schuyler	Sugar Creek	22.49	C
Schuyler	Town Branch	0.63	C
Schuyler	Unknown	0.84	C
Schuyler	West Branch Sugar Creek	4.61	C
Schuyler	Williams Creek	6.86	C
Scott	Little Sandy Creek	5.35	C
Scott	Mauvaise Terre Creek	1.63	C
Scott	Walnut Creek	3.49	C
Shelby	Brush Creek	0.47	C
Shelby	Brush Creek	0.50	C
Shelby	Coal Creek	0.80	C
Shelby	Flat Branch	0.94	C
Shelby	Kaskaskia River	0.27	B
Shelby	Lake Fork	0.94	C
Shelby	Opossum	2.51	C
Shelby	Rickland Creek	2.32	C
Shelby	Sand Creek	0.31	C
Shelby	Sexson Branch	3.61	C
Shelby	Unknown	0.61	C
Shelby	West Branch	2.39	C
St. Clair	None	0.00	NA
Stark	Camp Run	3.89	C
Stark	Jack Creek	4.43	C
Stark	Unknown	1.36	C
Stark	Walnut Creek	4.91	C
Stephenson	Crane Grove Creek	2.94	C
Stephenson	Summer Creek	1.12	C
Stephenson	Winneshiek Creek	1.37	C
Tazewell	Crane Creek	3.30	C
Tazewell	Dillon Creek	0.71	C
Tazewell	Main Ditch	7.29	C
Tazewell	Unknown	4.96	C
Tazewell	Unknown	3.06	C
Tazewell	Unknown	2.95	C
Union	Hutchins Creek	4.93	C
Vermilion	Bean Creek	0.80	C
Vermilion	Butler Branch	1.44	C
Vermilion	Fairview Drain	0.24	C
Vermilion	Fayette Drain	0.63	C
Vermilion	Feather Creek	1.58	C
Vermilion	Jordan Creek	7.55	C

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Vermilion	Olive Branch	5.74	C
Vermilion	Painter Creek	1.09	C
Vermilion	Stony Creek	3.62	C
Vermilion	Swank Creek	1.62	C
Vermilion	Unknown	0.64	C
Vermilion	Unknown	0.64	C
Vermilion	Unknown	1.38	C
Vermilion	Unknown	0.30	C
Vermilion	Vaum Branch	2.56	C
Vermilion	Vermilion River	9.19	C
Vermilion	Windfall Creek	3.63	C
Wabash	Unknown	2.22	C
Warren	Cedar Creek	2.46	C
Warren	Cedar Creek	2.28	C
Warren	Cedar Fork	2.27	C
Warren	Dauids Creek	2.35	C
Warren	Johns Creek	1.79	C
Warren	Latimer Creek	0.81	C
Warren	Markham Creek	0.65	C
Warren	Slug Run	1.23	C
Warren	South Fork	1.67	C
Warren	South Henderson Creek	1.76	C
Warren	Talbot Creek	0.43	C
Washington	Elkhorn Creek	0.88	C
Washington	Little Mud Creek	1.40	C
Washington	Middle Creek	2.07	C
Washington	North Creek	3.02	C
Washington	Unknown	0.57	C
Wayne	Deer Creek	5.20	C
Wayne	Endsley Creek	0.93	C
Wayne	Fourmile Creek	6.67	C
Wayne	Little Dry Fork	1.24	C
Wayne	Martin Creek	4.22	C
Wayne	Skillet Fork	0.42	C
White	French Creek	1.27	C
White	Indian Creek	1.20	C
White	Lost Creek	0.66	C
White	Sevenmile Creek	2.54	C
Whiteside	Buffalo Creek	1.08	C
Whiteside	County Ditch No. 1	16.59	C
Whiteside	Deer Creek	2.97	C
Whiteside	Ditch No. 2	1.61	C
Whiteside	Otter Creek	3.58	C
Whiteside	Unknown	0.20	C
Whiteside	Unknown	1.54	C
Will	Unknown	0.90	A

<i>County</i>	<i>Stream name</i>	<i>Length (miles)</i>	<i>Risk class</i>
Will	Unknown	0.45	A
Williamson	Bankston Fork	1.83	C
Williamson	Grassy Creek	2.79	C
Williamson	Little Grassy Creek	2.49	C
Williamson	Little Saline Creek	1.56	C
Williamson	Middle Wolf Creek	0.80	C
Williamson	South Fork Saline River	6.00	C
Williamson	Sugar Creek	10.72	C
Winnebago	Unknown	0.75	C
Woodford	East Branch Panther Creek	1.55	C
Woodford	Hallenback Creek	1.16	C
Woodford	Partridge Creek	3.63	C
Woodford	Richland Creek	4.49	C
Woodford	South Branch Crow Creek	0.52	C
Woodford	Tenmile Creek	1.27	C
Woodford	Unknown	1.21	C
Woodford	Wolf Creek	1.65	C

## **Appendix B. County Maps**

*(maps are provided as separate PDF files)*

**Illinois State**  
**WATER**  
**Survey (1895)**



Equal opportunity to participate in programs of the Illinois Department of Natural Resources (IDNR) and those funded by the U.S. Fish and Wildlife Service and other agencies is available to all individuals regardless of race, sex, national origin, disability, age, religion, or other non-merit factors. If you believe you have been discriminated against, contact the funding source's civil rights office and/or the Equal Employment Opportunity Officer, IDNR, One Natural Resources Way, Springfield, IL 62702-1271; 217/785-0067; TTY 217/782-9175.