

# Discovery Report

*Lower Rock Watershed, HUC 07090005*

*Illinois Counties – Boone, Carroll, DeKalb, Henry, Lee, Ogle, Mercer, Rock  
Island, Stephenson, Whiteside, Winnebago*

*03/24/2014*



**FEMA**



# Project Area Community List

Illinois County	Illinois Community
Boone	Caledonia, Village of
Carroll	Chadwick, Village of
	Lanark, City of
	Milledgeville, Village of
DeKalb\Lee	Lee, Village of
Henry	Cleveland, Village of
	Colona, City of
Lee	Ashton, Village of
	Dixon, City of
	Franklin Grove, Village of
	Harmon, Village of
	Nelson, Village of
	Steward, Village of
Mercer	Sherrard, Village of
Ogle	Adeline, Village of
	Byron, City of
	Creston, Village of
	Davis Junction, Village of
	Forreston, Village of
	Hillcrest, Village of
	Leaf River, Village of
	Mount Morris, Village of
	Oregon, City of
	Polo, City of
Stillman Valley, Village of	
Ogle\Lee	Rochelle, City of
Rock Island	Carbon Cliff, Village of
	East Moline, City of
	Hillsdale, Village of
	Milan, Village of
	Moline, City of
	Oak Grove, Village of
	Port Byron, Village of
	Rapids City, Village of
	Rock Island, City of
Silvis, City of	

## Project Area Community List (continued)

<b>Illinois County</b>	<b>Illinois Community</b>
Rock Island\Henry	Coal Valley, Village of
Rock Island\Mercer	Reynolds, Village of
Stephenson	German Valley, Village of
Whiteside	Coleta, Village of
	Erie, Village of
	Lyndon, Village of
	Morrison, City of
	Prophetstown, City of
	Rock Falls, City of
	Sterling, City of
Winnebago	Tampico, Village of
	Machesney Park, Village of
	Rockford, City of
	Rockton, Village of
	Roscoe, Village of
	South Beloit, City of
Winnebago, Village of	
Winnebago\Boone	Loves Park, City of
<b>Wisconsin County</b>	<b>Wisconsin Community</b>
Rock	Beloit, City of

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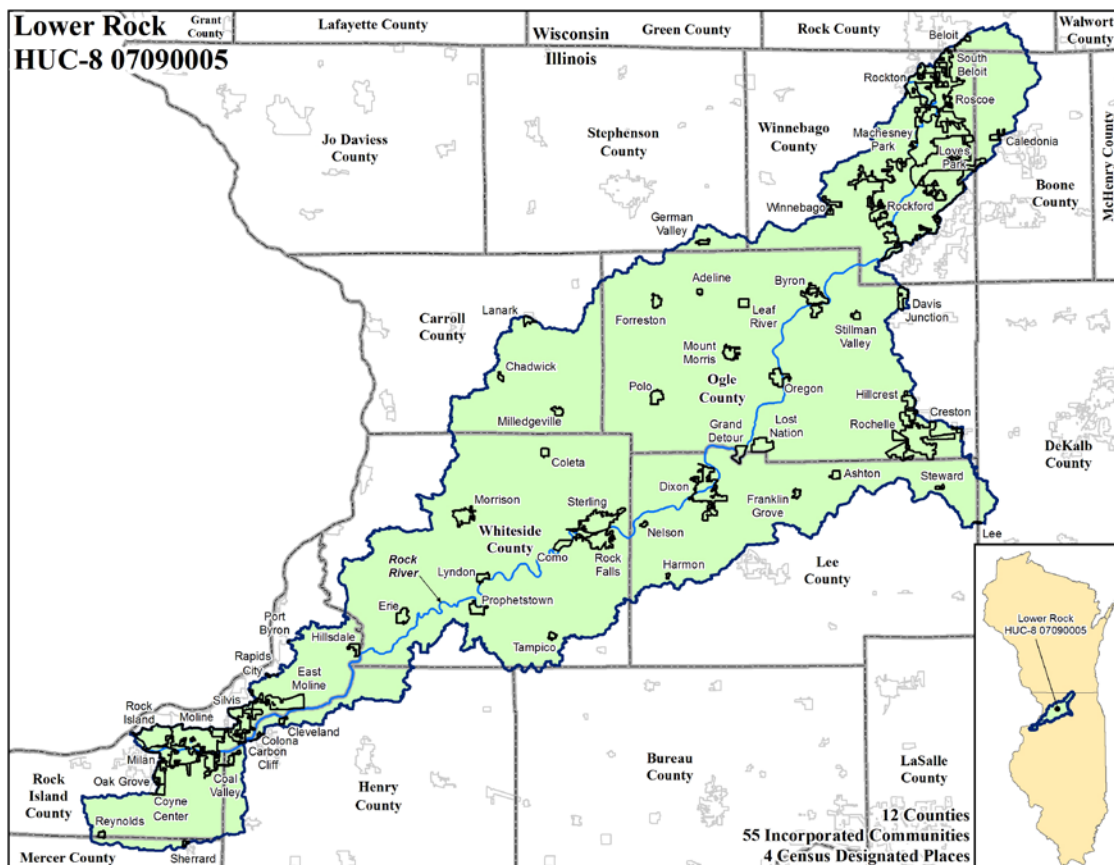
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# I. General Information

Figure 1. Lower Rock Watershed HUC 07090005



The Rock River originates in the Horicon Marsh in Rock County, Wisconsin, and flows in a southerly direction until it enters Illinois just south of Beloit, Wisconsin. The Rock River continues to flow south through Winnebago County, Illinois, where two of its largest tributaries, the Pecatonica River (drainage area of 2643 square miles) and the Kishwaukee River (drainage area of 1247 square miles), join it. The river continues to flow southwest across Illinois and enters the Mississippi River just below the City of Rock Island, Illinois. The third largest tributary, the Green River (drainage area of 1121 square miles), flows into the Rock River in Rock Island County, Illinois (IEPA, 1996). Each of the watersheds of these three tributary rivers has been assigned a Hydrologic Unit Code (HUC) 8 designation.

The main stem of the Rock River has two HUC8 watershed designated units, the Lower Rock River Watershed HUC 07090005 and the Upper Rock River Watershed HUC 07090001. The reach of the Rock River in Illinois is completely within the Lower Rock River HUC8 designated area. Within Illinois, the river has a drainage area of about 5317

square miles and is approximately 163 miles in length. Agricultural lands occupy the majority of the watershed area (ISWS, 2004).

The Lower Rock River watershed covers a total of 1,374,187 acres in Boone, Carroll, DeKalb, Henry, Lee, Mercer, Ogle, Rock Island, Stephenson, Whiteside, and Winnebago Counties in Illinois (IEPA, 1996). The three cities within the watershed with the largest populations are Rockford (152,871), Moline (43,483), and Rock Island (39,108). The communities that lie entirely and partly within the Lower Rock River watershed are listed with their U.S. Census Bureau 2010 populations in Table 1 (U.S. Census Bureau, 2010).

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. The NFIP status of the Lower Rock River watershed communities is listed in Table 1 (FEMA, October 21, 2013).

**Table 1. NFIP Participation Status and Population**

County	Name	NFIP Status	2010 Census Population
Boone	Boone County	Yes	54,165
	Caledonia, Village of	No	197
Carroll	Carroll County	Yes	15,387
	Chadwick, Village of	No	551
	Lanark, City of	Yes	1,457
	Milledgeville, Village of	Yes	1,032
DeKalb	DeKalb County	Yes	105,160
DeKalb\Lee	Lee, Village of	No	337
Henry	Cleveland, Village of	Yes	188
	Colona, City of	Yes	5,099
	Henry County	Yes	50,486
Lee	Ashton, Village of	Yes	972
	Dixon, City of	Yes	15,733
	Franklin Grove, Village of	No	1,021
	Harmon, Village of	No	120
	Lee County	Yes	36,031
	Nelson, Village of	Yes	170
	Steward, Village of	Yes	256



**Table 1. NFIP Participation Status and Population (continued)**

<b>County</b>	<b>Name</b>	<b>NFIP Status</b>	<b>2010 Census Population</b>
Mercer	Mercer County	Yes	16,434
	Sherrard, Village of	No	640
Ogle	Adeline, Village of	No	85
	Byron, City of	Yes	3,753
	Creston, Village of	No	662
	Davis Junction, Village of	Yes	2,373
	Forreston, Village of	Yes	1,446
	Hillcrest, Village of	Yes	1,326
	Leaf River, Village of	Yes	443
	Mount Morris, Village of	No	2,998
	Ogle County	Yes	53,497
	Oregon, City of	Yes	3,721
	Polo, City of	Yes	2,355
	Stillman Valley, Village of	No	1,120
Ogle\Lee	Rochelle, City of	Yes	9,574
Rock Island	Carbon Cliff, Village of	Yes	2,134
	East Moline, City of	Yes	21,302
	Hillsdale, Village of	Yes	523
	Milan, Village of	Yes	5,099
	Moline, City of	Yes	43,483
	Oak Grove, Village of	No	396
	Port Byron, Village of	Yes	1,647
	Rapids City, Village of	Yes	959
	Rock Island, City of	Yes	39,018
	Rock Island County	Yes	147,546
Silvis, City of	Yes	7,479	
Rock Island\Henry	Coal Valley, Village of	Yes	3,743
Rock Island\Mercer	Reynolds, Village of	Yes	539
Stephenson	German Valley, Village of	No	463
	Stephenson County	Yes	47,711
Whiteside	Coleta, Village of	No	164
	Erie, Village of	Yes	1,602
	Lyndon, Village of	Yes	648
	Morrison, City of	Yes	4,188
	Prophetstown, City of	Yes	2,080
	Rock Falls, City of	Yes	9,266

**Table 1. NFIP Participation Status and Population (continued)**

County	Name	NFIP Status	2010 Census Population
Whiteside	Sterling, City of	Yes	15,370
	Tampico, Village of	No	790
	Whiteside County	Yes	58,498
Winnebago	Machesney Park, Village of	Yes	23,499
	Rockford, City of	Yes	152,871
	Rockton, Village of	Suspended	7,685
	Roscoe, Village of	Yes	10,785
	South Beloit, City of	Yes	7,892
	Winnebago County	Yes	295,266
	Winnebago, Village of	No	3,101
Winnebago\Boone	Loves Park, City of	Yes	23,996
<b>Wisconsin</b>			
Rock	Beloit, City of	Yes	36,966
	Rock County	Yes	160,331

(FEMA, 10/21/2013) (U.S. Census Bureau, 2010)

## II. Watershed Stakeholder Coordination

This Risk MAP (Mapping, Assessment, and Planning) project complements work undertaken during the FFY2009 transition year, which includes updates to the hydrology and hydraulics of the Rock River in Rock Island, Whiteside, Henry, Lee, and Ogle Counties. The study of the Rock River was initiated on the basis of findings from the Scoping meetings in these counties during Map Modernization FY2005-2009 and the inconsistencies in flood elevations for the Rock River reported in the Special Problems Report prepared by the Illinois State Water Survey (ISWS). A pre-Discovery project narrative, the Scoping meeting reports, and the Special Problems Report are available in Appendix A.

The Discovery phase included an investigation of existing terrain, flood hazard data, and flood risk data; broad data mining for development of an initial Discovery map; and a detailed data collection to refine the Discovery maps, which were prepared by the ISWS. The ISWS did not perform scoping for countywide Digital Flood Insurance Rate Map (DFIRM) mapping for Winnebago County. Thus the Winnebago County/Lower Rock Watershed Stakeholder Coordination phase of Discovery was initiated with a conference call to the Winnebago County Floodplain Administrator during which time FEMA’s Risk MAP program and the Discovery process were reviewed and discussed. A project team

meeting was held with key Winnebago County officials on December 21, 2010, in Rockford, Illinois. During the meeting, an overview of the Risk MAP program and the Discovery process was provided by the ISWS staff. Information concerning Lower Rock River watershed projects and flood risk concerns was exchanged between the ISWS staff and community officials. A summary of the project team meeting and other Pre-Discovery materials are available in Appendix A.

Prior to the Discovery meeting, a contacts database was created using available websites and directories and making phone calls to the communities. These calls included an overview of the Risk MAP program and Discovery process. An invitation list for the Winnebago County Discovery meeting was compiled from the information gathered for the contacts database. Approximately four weeks prior to the meetings, ISWS sent letters to invited stakeholders, providing a background of the Risk MAP program and an invitation to attend a Discovery meeting. The contact information and invitations are available in Appendix B.

Only a small part of the Lower Rock HUC8 lies in Wisconsin. Although coordination with Wisconsin at any level was not specifically required in the Mapping Activity Statement, ISWS did reach out to Wisconsin DNR. Five members of the Wisconsin DNR attended the Discovery Meeting on January 25, 2011. Wisconsin DNR staff led discussions with communities located near the Illinois-Wisconsin state line.

The Winnebago County Lower Rock Watershed Discovery meeting was hosted by the ISWS on behalf of FEMA. The meeting was held at the following place, date, and time.

Wednesday, January 25, 2011/1:00 PM–3:00 PM  
RMAP Conference Room  
313 N. Main Street  
Rockford, Illinois

The Discovery meeting lasted approximately two hours and consisted of introductory presentations followed by a break-out session in which stakeholders could review the Discovery map, ask questions, and provide comments and revisions.

Presentations were given describing Risk MAP program goals and objectives, hazard mitigation projects, FEMA's Community Rating System (CRS), the National Flood Insurance Program (NFIP), and the Discovery meeting goals and objectives. The meeting materials are available in Appendix C.

For the break-out session, Discovery maps were available for review at five stations, and each station was staffed by meeting personnel. After reviewing the maps and clarifying any questions, stakeholders completed comment forms that included their contact information and recommended revisions or general feedback about flood risk issues and mitigation

efforts. The meeting summary, attendance, and comments are available in Appendix D. The Discovery Map is available in Appendix E.

As part of the ongoing outreach process meeting, participants received a meeting survey seeking their feedback on the Discovery meeting. The survey results are available in Appendix F. Following the meeting, a list of streams of concern for the Lower Rock watershed was compiled and is found in Appendix G.

After the review of the Discovery meeting comments, a follow-up technical meeting was held to discuss the Rock River tributaries to be included in the scope of work within Winnebago County. The *Winnebago County Hydrologic and Hydraulic Analysis, Proposed Scope of Work* is found in Appendix H. In addition, Lower Rock River Technical Meetings were held to review new study data and draft maps that were part of the Lower Rock Risk MAP project. The Post-Discovery meeting summaries are found in Appendix H. The Lower Rock Technical Meetings are listed in Table 2.

**Table 2. Lower Rock Watershed Post-Discovery Meetings**

Meeting Type / Topic	Date	Location
Lee and Ogle Counties Rock River Study Technical Outreach Meeting	04/05/2011	Ogle County Courthouse 105 S. 5 <sup>th</sup> Street Oregon, IL 61061
Winnebago Discovery Technical Follow-Up Meeting	09/27/2011	Rockford City Hall 425 East State Street Rockford, IL
Rock Island, Henry, and Whiteside Counties Rock River Study Technical Outreach Meeting	12/05/2011	Rock Island County Office Building 1504 3 <sup>rd</sup> Avenue Rock Island, IL 61201
Rock Island, Henry, and Whiteside Counties Rock River Study Technical Outreach Meeting	12/06/2011	Sterling City Hall 212 3 <sup>rd</sup> Avenue Sterling, IL 61801
Winnebago County/Rock River Study Technical Outreach Meeting	05/01/2013	Regional Planning & Design Center 315 North Main Street Rockford, Illinois 61101

### III. Data

A list of the data collected, the deliverable or product in which the data are included, the source of the data, and any pertinent comments is provided in Table 3. These data can be used for flood risk products and additional information to benefit the project.

**Table 3. Data Collection for Lower Rock Watershed**

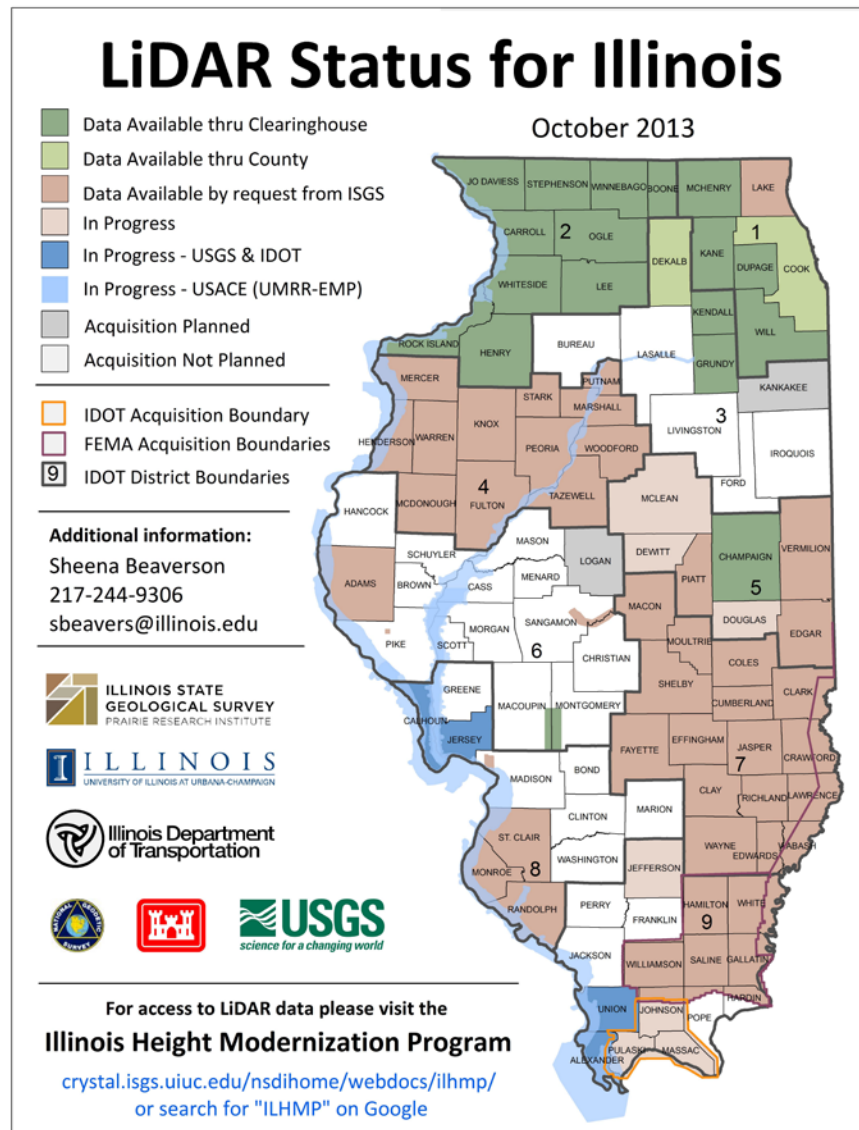
<b>Data Types</b>	<b>Description</b>	<b>Source</b>	<b>Deliverable</b>
Areas of Mitigation Success	Successful flood mitigation strategies, tactics, and/or projects	Community comments from Discovery	Discovery Map; Geodatabase
At Risk Essential Facilities	Essential facilities at risk for flooding	Mercer County Multi-jurisdictional	Discovery Map; Geodatabase
Coordinated Needs Management Strategy (CNMS) Streams	Streams categorized by study validity	Region V Coordinated Needs Management Strategy Inventory \ ISWS	Geodatabase
Community Boundaries	Location of community boundaries	U.S. Census 2013	Discovery Map; Geodatabase
County Boundaries	Location of county boundaries	U.S. Census 2013	Discovery Map; Geodatabase
Dams	Location of dams	USACE National Inventory of Dams 1999 taken from the HAZUS Dams Database	Discovery Map; Geodatabase
EPA 303(d) Streams	Streams included in the EPA 303(d) list of impaired streams	U.S. EPA Office of Water	Geodatabase
FEMA Average Annualized Loss	FEMA's Level 1 Hazus Average Annualized Loss Analysis	FEMA	Discovery Map; Geodatabase
FEMA Composite Risk Analysis	National Flood Risk Analysis HUC Risk Data.	FEMA Region V	Geodatabase
FEMA Public Assistance Data	Location of public assistance grant projects	Federal Emergency Management Agency	Discovery Map; Geodatabase
HUC 8, 10, & 12 Watersheds	Watershed Boundary (HUC8)	USGS National Hydrography Dataset	Discovery Map; Geodatabase
Key Emergency Routes Overtopped	Location of roads and bridges overtopped by flooding	Community comments from Discovery	Discovery Map; Geodatabase
Letters of Map Change	Locations of letters of map change	FEMA Mapping Information Platform Database	Discovery Map; Geodatabase
Other	Items that do not fit into other categories	Community comments from Discovery	Discovery Map; Geodatabase
Other Flood Risk Areas	Locations of flooding outside of SFHA	Community comments from Discovery	Discovery Map; Geodatabase
Roads	Location of interstates and major highways	Illinois Department of Transportation, 2012	Discovery Map; Geodatabase
Significant Land Use Change	Areas of significant land use change	Community comments from Discovery	Discovery Map; Geodatabase
Special Flood Hazard Areas	Location of special flood hazard areas	FEMA Digital Flood Insurance Rate Maps	Discovery Map; Geodatabase
Stream Flow Constrictions	Locations of ice jams and other stream flow constrictions	US Army Corps. Of Engineers - Ice Jam Database, IDNR Office of Water Resources	Discovery Map; Geodatabase
Stream Gages	Locations of stream gages operated by multiple agencies	United States Geological Survey (USGS)	Discovery Map; Geodatabase
Wetlands	Location and type of wetlands and deep water habitats	U.S. Fish and Wildlife Service National Wetlands Inventory	Discovery Map; Geodatabase

## i. Data That Can be Used for Flood Risk Products

### Topographic and Imagery Data

As part of the Illinois Height Modernization effort, the Illinois Department of Transportation (IDOT) is leading LiDAR data acquisition for Illinois counties scheduled by IDOT district. Figure 2 displays the LiDAR status for Illinois counties.

Figure 2. LiDAR Status for Illinois



## USGS Gages

The Illinois State Water Survey (ISWS) project teams identified United States Geological Survey (USGS) stream gages in the watershed. The locations of the gages are shown on the Discovery map and are listed in Table 4.

**Table 4. USGS Stream Gages**

Gage Number	Station Name and Location
<b>Illinois</b>	
05437500	Rock River at Rockton, IL
05437600	Rock River Tributary near Rockton, IL
05437610	Rock River at Latham Park, IL
05437641	Rock River at Auburn Street at Rockford, IL
05437695	Keith Creek at Eighth Street at Rockford, IL
05440650	Stillman Creek Tributary near Holcomb, IL
05440700	Rock River at Byron, IL
05440900	Leaf River Tributary near Forreston, IL
05441000	Leaf River at Leaf River, IL
05441500	Rock River at Oregon, ILL
05442000	Kyte River near Flagg Center, IL
05442300	Rock River at Dixon, IL
05443000	Rock River above Sinnissippi Dam at Rock Falls, IL
05443500	Rock River at Como, IL
05444000	Elk Horn Creek near Penrose, IL
05444100	Spring Creek Tributary near Coleta, IL
05445500	Rock Creek near Morrison, IL
05446000	Rock Creek at Morrison, IL
05446500	Rock River near Joslin, IL
05448000	Mill Creek at Milan, IL
<b>Wisconsin</b>	
	*There are no stream gages within this watershed in WI.

(USGS, 2013)

## ii. Other Data and Information

### Mitigation Plans/Status, Mitigation Projects

Multi-Hazard Mitigation Plans (MHMPs) are prepared for unincorporated and incorporated communities to help communities reduce long-term risk to life and property from natural hazards. The plans include comprehensive mitigation strategies intended to promote flood-resilient communities. The ISWS project team reviewed the mitigation

strategies in available MHMPs to determine which, if any, were relevant for the Discovery process. Table 5 lists the MHMPs, their status, and their availability for review.

**Table 5. MHMPs: Status and Availability**

County	MHMP	Hazus	Issue Date	Expiration Date	Available for Review
<b>Illinois</b>					
Boone	In Progress	N/A	N/A	N/A	N/A
Carroll	Y	N	01/2013	01/2018	Y
DeKalb	Y	Y	06/2013	06/2018	Y
Henry	Meets Requirements Awaiting Adoption	N/A	N/A	N/A	N/A
Lee	Y	N	03/2011	03/2016	Y
Mercer	Y	Y	02/2010	02/2015	Y
Ogle	Y	N	12/2010	12/2015	Y
Rock Island	Y	N	04/2009	04/2014	Y
Stephenson	Application for Update Funding Submitted	Y	06/2008	06/2013	Y
Whiteside	Application for Funding Submitted	N/A	N/A	N/A	N/A
Winnebago	Update in Progress	N	07/2008	07/2013	Y

(IEMA, 2014)

### **CNMS and NFIP Mapping Study Needs**

To provide a basis for prioritizing mapping needs in the watershed, a methodology was determined to rank streams based on several criteria. There are a number of flooding issues in the Lower Rock watershed. Streams of concern were identified by performing a spatial analysis of the data to determine where there are combinations of potentially invalid or unverified engineering data, high risk, and community concerns. Three sources of information were used for this initial screening task. The Coordinated Needs Management Strategy (CNMS) Phase III is a geospatial database of stream reaches for which the engineering analyses have been assessed as valid, unverified, or unknown. The data from the CNMS spatial database used for this analysis was updated in November, 2013. The FEMA National Flood Risk Analysis HUC Risk Data were used to provide a relative risk ranking. A Census Block Group GIS layer contains aggregated flood claims data along with 10 weighted parameters used to compute the relative national risk (1 to 10, with 1 being highest risk) by Census Block Group. Study requests contained in CNMS as well as



the local mapping concerns collected at the Discovery meeting were used to identify areas of known flooding issues.

A subset of stream segments was created by combining those stream segments identified as having engineering analyses that may no longer be valid (CNMS unverified) and any stream segment for which comments collected indicate that the special flood hazard area SFHA mapping is inaccurate or inadequate. This subset of stream segments was then intersected with the HUC Risk Data and separated into two categories: high concern for those segments which flow through Census Block Groups with Risk Rankings between 1 and 5; medium concern for those segments which flow through Census Block Groups with Risk Rankings between 6 and 10. Stream segments outside the combined set were categorized as low concern. The entire list of study needs, including stream names, floodplain zone, stream length, and category of concern are provided in Appendix G. Final ranking of CNMS scores are stored in the geodatabase as well as a GIS feature class derived from the CNMS named Streams of Concern. Table 6 displays the Streams of Concern Categorization scoring matrix.

**Table 6. Streams of Concern Categorization**

Level of Concern	CNMS Status	Study Request	FEMA Risk Decile
<i>High</i>	Unverified	Yes/No	1-5
	Unknown	Yes	1-5
<i>Medium</i>	Unverified	Yes/No	6-10
	Unknown	Yes	6-10
	Valid	Yes	1-10
<i>Low</i>	Valid	No	n/a
	Unknown	No	n/a

### **Community Rating System (CRS)**

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS. The three goals are to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

One community and two counties in the Lower Rock River watershed participate in the CRS. Table 7 lists the Lower Rock River watershed communities and counties that participate in the CRS.

**Table 7. CRS Communities**

<b>Community/County</b>	<b>Rating</b>	<b>Premium Discount</b>
Moline, City of	8	10%
Rock Island County	7	15%
Whiteside County	8	10%

(FEMA, 2014)

## **Levees**

The levees described below are listed in the U.S. Army Corps of Engineers (USACE) National Levee Database (NLD) (USACE, 2014) unless otherwise noted. Feature names used here are based on the NLD. Information on the participation in the USACE Levee Inspections and Levee Certification program, PL84-99, has been included when information was available (USACE, 2001). Status in the PL84-99 program was determined at the time of this report and is subject to change.

### **Rock River Levees**

Several levees exist along the Rock River. The Milan-Big Island Levee System and the Meredosia Back-Door Levee were previously provided provisionally accredited levee status by FEMA for protection against the 1% annual chance flood event. The remainder of the levees along the Rock River may provide some degree of flood protection, but have not been previously shown to provide protection from the 1% annual chance flood event by FEMA.

- The Milan Big Island Levee system, indicated in the National Levee Database as Big Island LDB Mill Creek and Rock River, Milan- RDB Mill Creek/LDB Rock River, Milan-RDB Mill Creek/LDB Rock River, Milan-LDB Mill Creek/Rock River, and Milan-RDB South Slough Mill Creek, is located in Rock Island County, the City of Rock Island, and the Village of Milan near the Rock River confluence with the Mississippi River. The levee system accreditation package was accepted by FEMA on October 2010. Rock Island County FIRM panels 17161C 304, 305, and 308 will need to be revised to reflect the accredited status of this levee. The levee was listed as being in the PL84-99 levee program as of March 2013.
- The Meredosia Levee system includes two levees that were built to protect the Meredosia Ditch Bottomlands area from both Mississippi and Rock River flooding. The Meredosia Ditch Back-Door Levee refers to the levee along the Rock River floodplain at the upstream reach of the Meredosia Ditch draining to the Rock River. The Meredosia Ditch Levee refers to the levee along the Mississippi River. This system was previously shown to provide protection on the FEMA Flood Insurance Rate Maps (FIRMs). During the provisional levee accreditation period, it was determined the Meredosia Back-Door Levee was not expected to meet the accreditation requirements. As of January 2014, FEMA is working with the levee district to resolve an appropriate revised mapping of the Meredosia Ditch

Bottomlands. The levee was listed as being in the PL84-99 levee program as of March 2013.

- The Zuma Canoe Creek Special Service Levee is located on the right bank of the Rock River from approximately River Mile 22.1 to 29.3 and is an earthen embankment approximately 7.6 miles long (USACE Rock Island, August 1988). The non-federal levee provides flood protection for a few residential structures and approximately 2,600 agricultural acres in Rock Island County and re-entered the USACE PL84-99 program as of March 2013. The levee is located at the USGS gage 05446500, near Joslin, Illinois (USACE PL84-99 Eligibility Inspection Report, 1988). The levee has never been shown to provide protection on FEMA Flood Insurance Rate Maps (FIRMs).
- The Penny Slough Drainage & Levee District Levee is a federally built earthen levee approximately 9 miles long on the Rock River from river miles 25.8 to 34.4. The levee district was organized in 1940. The levee was not listed as being in the PL84-99 levee program as of March 2013. The levee has never been shown to provide protection on FEMA FIRMs.
- The Anderson Weaver-Erie Township Levee provides some flood protection to the Village of Erie and the surrounding agricultural area in Whiteside County. The non-federally built earthen levee reaches from River Mile 33 to 39.7 on the Rock River and is approximately 8.4 miles long (USACE Rock Island, May 1988). The levee is not in the USACE National Levee Database but is included in the FEMA Levee Inventory. The levee was not listed as being in the PL84-99 levee program as of March 2013. The levee has never been shown to provide protection on FEMA FIRMs.
- The Charles Brown Levee is located at River Mile 40.6 to 41.5 on the Rock River. The structure provides some protection for the agricultural area behind the levee. The levee is not in the USACE National Levee Database but is included in the FEMA Levee Inventory. The levee has never been shown to provide protection on FEMA FIRMs.
- The Paul Young Levee is located at River Mile 45 on the Rock River. The structure provides some protection for the agricultural area behind the levee. The levee is not in the USACE National Levee Database but is included in the FEMA Levee Inventory. The levee has never been shown to provide protection on FEMA FIRMs.

### **Rock Creek Levees**

- Creamery Road Levee and Rock Creek Levee, levees in Whiteside County, are located on opposite banks along Rock Creek in Whiteside County north of I-88. These levees are along a Zone A floodplain reach of Rock Creek and have not been shown to provide protection on the FEMA FIRMs. The levee is not in the USACE National Levee Database but is included in the FEMA Levee Inventory.
- The Morrison City Park & Golf Course Levee is along the Zone AE reach of Rock Creek in the City of Morrison just upstream of the USGS Rock Creek stream gage at Morrison. The levee has not been shown to provide protection on the FEMA

FIRMs. The levee is not in the USACE National Levee Database but is included in the FEMA Levee Inventory.

#### **Kent Creek South Branch Levees**

- The Kent Creek South Branch Levees are downstream of Levings Lake. There are two structures that appear to restrict the floodplain, though they are not included in the effective FEMA Flood Insurance Study (FIS).

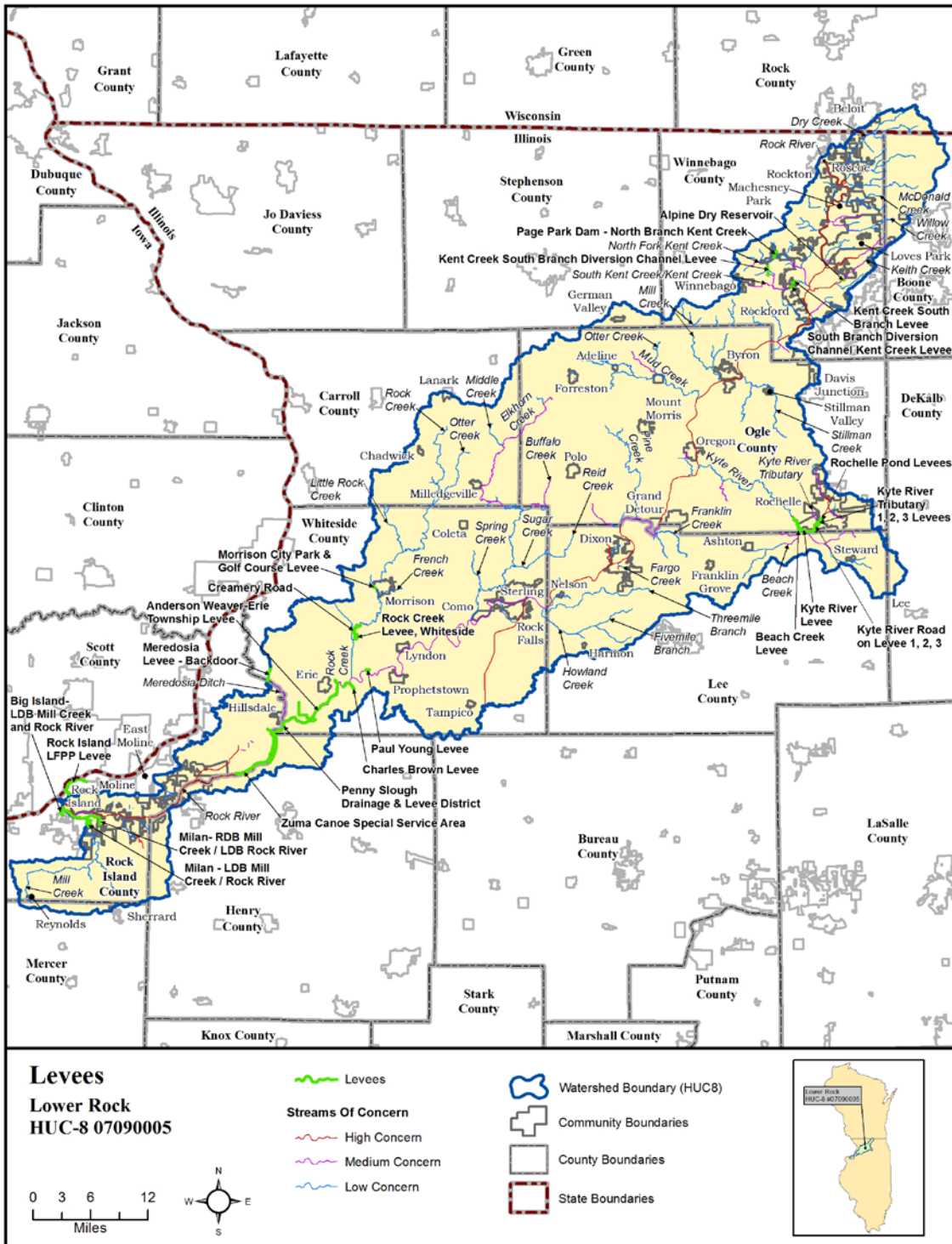
#### **Kyte River Levees**

- In Ogle County, the Kyte River Levee system is not accredited by FEMA as providing protection for the base flood event but has been previously shown on the FIRMs. These levees are not in the USACE National Levee Database but are included in the FEMA Levee Inventory.
- Rochelle Pond Levees are located upstream of Intermodal Drive on the Kyte River in the City of Rochelle. The base-flood elevation (BFE) is lower than the landside elevations within the water treatment facility site. The site will not show inundation from the 1-percent-annual-chance flood.
- Kyte River Levees are along both banks of an approximately 4.5-mile reach of the Kyte River just downstream of and within the City of Rochelle and Ogle County.
- Beach Creek Levee is located at the Beach Creek confluence with the Kyte River in Ogle County. The levee system included in the FEMA levee inventory lines both banks of Beach Creek from the confluence upstream to the Ogle County line.

#### **Winnebago County Levees**

- Several levees are currently indicated in the NLD that are not levees, but were determined to be other flood control structures during ongoing hydrologic and hydraulic analysis in Winnebago County. These include the Kent Creek South Branch Diversion Channel, the Levings Lake Dam, the Alpine Dry Reservoir Dam on Keith Creek, and the Page Park Dam on North Kent Creek.

Figure 3. Lower Rock Levees



## Floodplain Management/Community Assistance Visits (CAVs)

Community Assistance Contacts (CACs) and Community Assistance Visits (CAVs) are two key methods FEMA uses to identify community floodplain management program deficiencies and violations and to provide technical assistance to resolve these issues. As the state coordinating agency for the National Flood Insurance Program, the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) and the Indiana Department of Natural Resources (IN-DNR), conduct CACs and CAVs as part of their floodplain management programs. A CAV typically consists of a tour of the floodplain to assess any recent construction activities, a review of the local permitting process, and evaluation of the local floodplain ordinance. A meeting with the local floodplain official is held to discuss the NFIP, the local permitting process, any recent flood events, training opportunities, and any program deficiencies.

A CAC can be conducted by a telephone call to the community or a brief visit. The CAC provides a means to establish or re-establish contact with an NFIP community to identify any existing problems or issues and to offer assistance if necessary. Table 8 lists the communities in the watershed and the date of their latest CAV or CAC.

**Table 8. Recent CAVs/CACs**

County	Community	CID	CAV	CAC
Boone	Caledonia, Village of	170788	N/A	N/A
	Boone County	170807	04/21/2011	12/17/1993
Carroll	Chadwick, Village of	170890	N/A	N/A
	Lanark, City of	170891	N/A	N/A
	Milledgeville, Village of	170908	N/A	04/25/1997
	Carroll County	170019	02/19/1997	05/19/2009
De Kalb	DeKalb County	170808	09/15/2003	N/A
De Kalb\Lee	Lee, Village of	171035	N/A	N/A
Henry	Cleveland, Village of	170748	N/A	12/22/1994
	Colona, City of	170749	04/01/2009	N/A
	Henry County	170739	02/10/2000	03/30/2011
Lee	Ashton, Village of	170415	05/18/2010	N/A
	Dixon, City of	170417	12/28/2005	N/A
	Franklin Grove, Village of	171202	N/A	N/A
	Harmon, Village of	171201	N/A	N/A
	Nelson, Village of	170418	N/A	09/10/1997
	Steward, Village of	170420	N/A	09/20/1994
	Lee County	170413	03/11/1998	03/30/2011
Lee\Ogle	Rochelle, City of	170532	09/24/2003	N/A
Mercer	Sherrard, Village of	171262	N/A	N/A
	Mercer County	170806	03/10/1994	05/17/2007

**Table 8. Recent CAV/CACs (continued)**

County	Community	CID	CAV	CAC
Ogle	Adeline, Village of	170835	N/A	N/A
	Byron, City of	170526	07/10/2006	11/02/1994
	Creston, Village of	171289	N/A	N/A
	Davis Junction, Village of	171076	N/A	N/A
	Forreston, Village of	170527	N/A	09/21/2000
	Hillcrest, Village of	170956	N/A	N/A
	Leaf River, Village of	170528	N/A	04/25/1997
	Mount Morris, Village of	171290	N/A	N/A
	Oregon, City of	170530	07/10/ 2007	N/A
	Polo, City of	170531	N/A	09/21/2000
	Stillman Valley, Village of	171291	N/A	N/A
	Ogle County	170525	01/16/2013	N/A
Rock Island	Carbon Cliff, Village of	170584	08/06/2013	09/10/1996
	East Moline, City of	170587	02/27/2007	N/A
	Hillsdale, Village of	170589	03/24/2004	05/15/1997
	Milan, Village of	170590	01/17/2001	N/A
	Moline, City of	170591	04/01/2009	N/A
	Oak Grove, Village of	170882	N/A	N/A
	Port Byron, Village of	170592	09/16/2004	N/A
	Rapids City, Village of	170593	N/A	09/05/1997
	Rock Island, City of	175171	03/30/2011	N/A
	Silvis, City of	170595	N/A	09/23/1998
Rock Island County	170582	03/25/2004	N/A	
Rock Island\Henry	Coal Valley, Village of	170585	N/A	N/A
Rock Island\Mercer	Reynolds, Village of	170883	N/A	N/A
Stephenson	German Valley, Village of	171339	N/A	N/A
	Stephenson County	170639	08/01/2001	N/A
Whiteside	Coleta, Village of	171370	N/A	N/A
	Erie, Village of	170689	03/24/2004	09/12/1996
	Lyndon, Village of	170917	N/A	09/10/1997
	Morrison, City of	170691	N/A	09/12/1996
	Prophetstown, City of	170692	03/24/2004	N/A
	Rock Falls, City of	170694	12/28/2005	09/08/1997
	Sterling, City of	170693	05/12/1993	09/22/2000
	Tampico, Village of	171371	N/A	N/A
Whiteside County	170687	12/29/2005	11/13/1996	
Winnebago	Machesney Park, Village of	171009	07/14/2010	11/01/1994
	Rockford, City of	170723	08/30/2006	N/A

**Table 8. Recent CAV/CACs (continued)**

County	Community	CID	CAV	CAC
Winnebago	Rockton, Village of	170774	N/A	N/A
	Roscoe, Village of	170724	04/01/2005	N/A
	South Beloit, City of	170725	08/31/2006	04/21/2011
	Winnebago, Village of	175183	N/A	N/A
	Winnebago County	170720	08/13/1998	N/A
Winnebago\Boone	Loves Park, City of	170722	07/31/2001	11/01/1994

(FEMA, 2013)

### Regulatory Mapping

As part of FEMA’s Map Modernization program, the ISWS has recently updated several of the countywide Flood Insurance Rate Maps (FIRMs) throughout Illinois. Many of these maps are effective or in the final stages of map adoption. While these maps are in a digital format, they do not necessarily reflect newer hydrologic or hydraulic study information and therefore may not be the most accurate representation of flood risk within the watershed. Table 9 lists the Digital Flood Insurance Rate Map (DFIRM) status for counties in the Lower Rock River watershed.

**Table 9. Digital Flood Insurance Rate Map Status**

County	Status	Effective Date
<b>Illinois</b>		
Boone	Effective	02/18/2011
Carroll	Effective	12/17/2010
DeKalb	Effective	01/02/2009
Henry	Effective	06/02/2011
Lee	Effective	04/05/2010
Mercer	Effective	04/19/2010
Ogle	Effective	12/17/2010
Rock Island	Effective	04/05/2010
Stephenson	Effective	03/03/2011
Whiteside	Effective	02/18/2011
Winnebago	Effective	09/06/2006

(FEMA, 2013)

## IV. Risk MAP Needs and Recommendations

The project team presented the Discovery map and discussed the results of the data collection and analysis with the watershed stakeholders in detail during the Discovery



meeting. This section addresses the areas of concern and interest within the Lower Rock watershed that could be addressed with Risk MAP projects.

### i. Floodplain Studies

Although Digital Flood Insurance Rate Maps (DFIRMs) have been produced for many counties in the Lower Rock HUC 8 watershed, there are still study and mapping needs that exist. Using the Coordinated Needs Management System (CNMS) and input from community stakeholders, Illinois State Survey (ISWS) has identified several areas where new or updated studies rank highest in terms of need and risk relative to other locations in the Lower Rock HUC8 watershed. The proposed new study areas and types (detailed or approximate) are listed in Table 10. All streams listed in Table 10 are found in Illinois. A few Lower Rock watershed streams exist in Wisconsin, but none of these streams meet the streams of concern criteria, as defined herein, which are necessary to be listed in Table 10. The entire list of all streams of concern within the Lower Rock watershed is found in Appendix G.

The goal of the floodplain mapping program is to have a high quality, model-based floodplain mapped for all streams that drain greater than 1 square mile. While the mapping needs listed in the following table are the highest priority stream reaches for modeling, there are other mapping needs that also need to be included in any project proposed for this basin. These needs are fully documented in the CNMS. Appendix G lists the additional mapping needs required to meet this goal.

Hydrologic and hydraulic studies were initiated in FFY2009 and 2010 for some of the streams listed in Table 10 as noted in the last column.

**Table 10. Mapping Needs**

<b>Flooding Source</b>	<b>Study Length (Miles)</b>	<b>Effective Study Type</b>	<b>H &amp; H study in progress or completed</b>
Beach Creek	2.45	A	Y
Buffalo Creek	5.84	A	
Coal Creek	2.35	A	
Elkhorn Creek	7.72	A	
Elkhorn Creek	16.63	A	
Grubin Ditch	2.24	A	Y
Illinois And Mississippi Canal Feeder	13.18	A	
John's Creek	3.00	A	Y

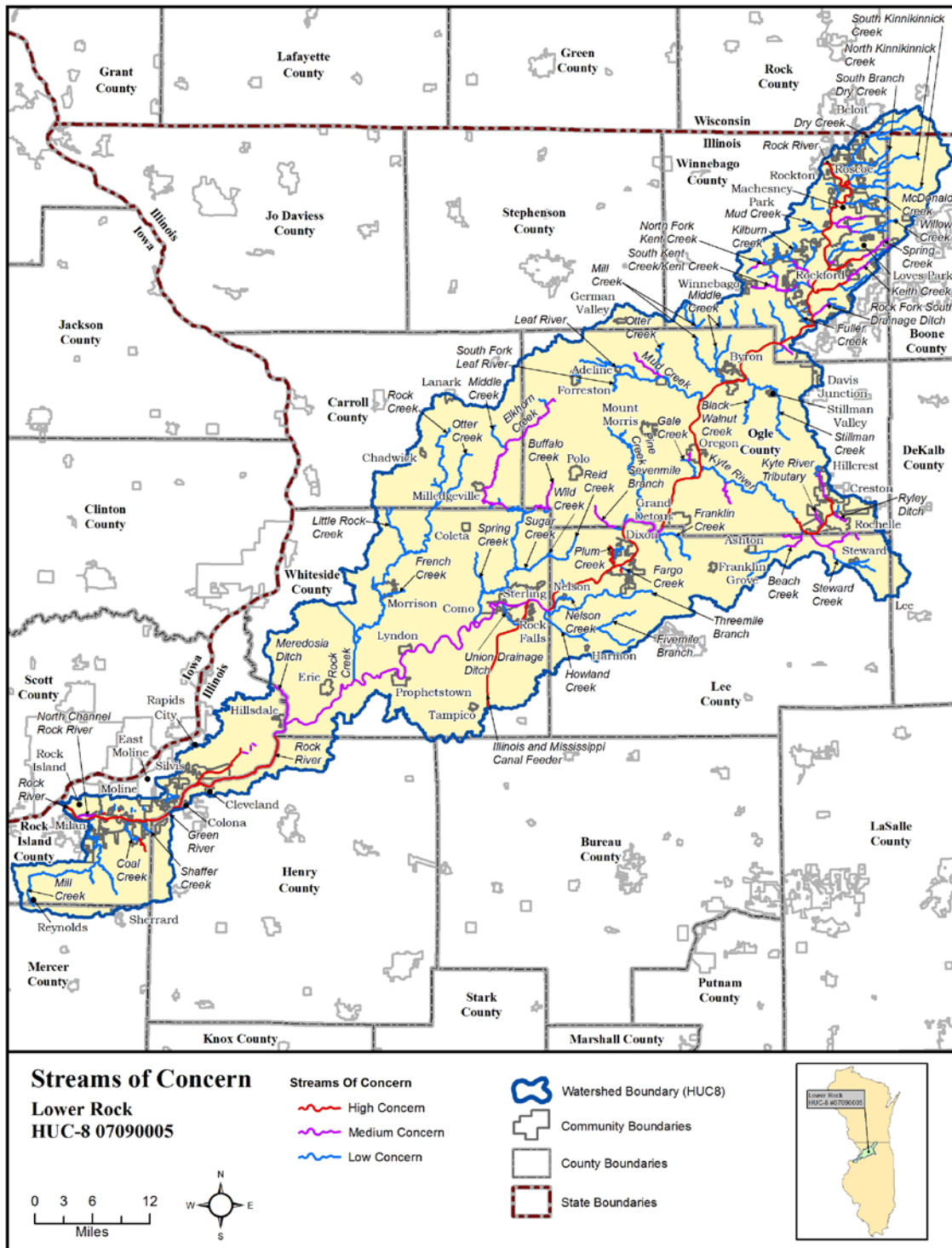
**Table 10. Mapping Needs (continued)**

<b>Flooding Source</b>	<b>Study Length (Miles)</b>	<b>Effective Study Type</b>	<b>H &amp; H study in progress or completed</b>
John's Creek	0.83	A	Y
Keith Creek	0.32	A	Y
Keith Creek	0.40	A	Y
Keith Creek	4.49	AE	Y
Keith Creek	4.32	AE	Y
Kyte River	3.24	A	Y
Kyte River	0.25	AE	Y
Kyte River	0.25	AE	Y
Kyte River	3.67	AE	Y
Kyte River	4.16	AE	Y
Kyte River Tributary (Flagg Creek)	0.90	A	Y
Kyte River Tributary (Flagg Creek)	1.06	AE	Y
Lake Mistake Drain	0.80	AE	
Meredosia Ditch	4.86	AE	Y
Meredosia Ditch	4.86	AE	Y
Mud Creek	5.58	A	
North Channel Rock River	1.23	AE	Y
North Channel Rock River	1.23	AE	Y
North Channel Rock River	2.46	AE	Y
North Fork Kent Creek	6.11	AE	Y
Plum Creek	3.46	AE	
Rock Fork South Drainage Ditch	2.33	A	Y
Rock River	11.03	AE	Y
Rock River	15.87	AE	Y
Rock River	18.30	AE	Y
Rock River	18.30	AE	Y
Rock River	28.19	AE	Y
Rock River	29.92	AE	Y
Rock River	2.02	AE	Y
Rock River	2.02	AE	Y
Rock River	7.16	AE	Y
Rock River	7.16	AE	Y
Rock River	46.74	AE	Y
Ryley Ditch	0.26	A	Y
Ryley Ditch	0.69	AE	Y
Ryley Ditch	0.75	AE	Y

**Table 10. Mapping Needs (continued)**

<b>Flooding Source</b>	<b>Study Length (Miles)</b>	<b>Effective Study Type</b>	<b>H &amp; H study in progress or completed</b>
Sevenmile Branch	3.89	A	
South Ditch	0.72	AE	Y
South Kent Creek & Kent Creek	1.37	A	
South Kent Creek/Kent Creek	5.02	AE	
Spring Creek	3.74	A	Y
Spring Creek	5.00	AE	Y
Steward Creek	3.38	A	Y
Tributary No. 1	0.23	AE	Y
Unnamed Branch South Kent Creek	1.86	AE	
Unnamed Pond # 1	0.26	AE	Y
Unnamed Tributary No. 1 (Banning Lateral)	0.15	AE	Y
Unnamed Tributary To Willow Creek	3.87	A	Y
West Branch Fargo Creek	0.51	AE	
Willow Creek	3.48	AE	

Figure 4. Illinois Streams of Concern



## ii. Mitigation Projects

In the Discovery meetings, community stakeholders identified several possible locations in which mitigation projects could reduce the impacts of flooding. Topics of mitigation interest included levees, roads that frequently flood, significant riverine erosion, at-risk essential facilities, stream flow constriction, and recent and/or future development. Table 11 lists the mitigation projects identified during the Discovery meetings and follow-up communications.

**Table 11. Mitigation Projects**

Community	Subject(s)	Project	Status	Comment Number
Winnebago Co.	Stream Maintenance	Clear culvert blockage from South Fork Kent Creek at Weldon Road	Identified	13A
Village of Machesney Park	Floodplain Encroachment	Re-assess SFHA due to apartment building encroachment on Willow Creek	Identified	13C
Roscoe Township	Land Use Change	Re-assess SFHA due to fill of flood fringe area to construct a subdivision along Rock River	Identified	13
City of Rockford	Flood control\management	Correct overtopping of Rock River at Country Club Street	Identified	16A
City of Rockford	Flood control\management	Correct overtopping of Rock River at Browns Beach	Identified	16B
Winnebago Co.	Land Use Change	Re-assess SFHA-land NE of Meridian and State Streets\South Fork Kent Creek has seen re-development	Identified	16C
Winnebago Co.	Flood control\management	Correct overtopping of Rock River at Pierport Roadway (Avenue)	Identified	16D
City of Rockford	Flood control\management	Correct drainage problems to eliminate overtopping of Rock River upstream of Kent Creek confluence	Identified	17A
City of Rockford	Flood control\management	Eliminate excess runoff in parking lot adjacent to Keith Creek Tributary, upstream downtown area	Identified	18A
City of Rockford	Flood control\management	Correct overtopping of Rock River at Welsh School- Junction Custer and Huffmann	Identified	18B
City of Rockford	Flood control\management	Correct overtopping of Keith Creek at Charles and 20 <sup>th</sup> Street	Identified	18C
City of Rockford	Flood control\management	Correct overtopping of South Kent Creek at South Pierpont Ave	Identified	18D
City of Rockford	Flood control\management	Correct overtopping of Keith Creek at 10 <sup>th</sup> Avenue\ Park	Identified	18E
City of Rockford	Flood control\management	Correct overtopping of Rock River Unnamed Tributary at 20 <sup>th</sup> Street viaduct	Identified	18F

**Table 11. Mitigation Projects (continued)**

<b>Community</b>	<b>Subject(s)</b>	<b>Project</b>	<b>Status</b>	<b>Comment Number</b>
City of Rockford	Flood control\management	Correct overtopping of Keith Creek at Broadway viaduct	Identified	18G
City of Rockford	Flood control\management	Correct overtopping of Keith Creek at 9 <sup>th</sup> Street viaduct	Identified	18H
Roscoe Township	Flood control\management	Overtopping of Rock River at Edgemere Terrace	In progress	21A
Roscoe Township	Flood control\management	Correct overtopping of Kinnikinnick Creek between Elevator Road and McCurry Road	Identified	21B
Winnebago Township	Flood control\management	Correct overtopping of South Fork Kent Creek at Cunningham Road	Identified	21D
Rockford Township	Flood control\management	Correct overtopping of North Fork Kent Creek north of Auburn Road; Re-assess SFHA	Identified	21E
Rockford Township	Flood control\management	Correct overtopping of Spring Creek at Spring Creek Road\Alpine Road	Identified	21F
Rockford Township	Flood control\management	Correct overtopping of Keith Creek North of Guilford Road	Identified	21G
Rockford Township	Flood control\management	Re-assess SFHA; Correct overtopping Unnamed Creek at Welworth Avenue\Wentworth Avenue	Identified	21H
Rockford Township	Flood control\management	Flooding issue Welworth Avenue\Wentworth Avenue, South of Charles Street, Rockford Township; un-named creek; Re-assess SFHA	Identified	21I
Rockford Township	Flood control\management	Madigan Creek, South of Newburg Road, West of Perryville Road, Rockford Township; flooding issue; Re-assess SFHA	Identified	21J
Rockford Township	Flood control\management	Madigan Creek between Perryville Road and Bell School Road, North of Newburg Road, Rockford Township; flooding issue; Re-assess SFHA	Identified	21K
Cherry Valley Township	Flood control\management	Madigan Creek, south of Harrison Avenue, East of Mulford Road – Chatsworth Drive; Re-assess SFHA	Identified	21L
Rockford Township	Flood control\management	Correct overtopping of Rock River at Blackhawk Island	In progress	21M
City of Rockford	Land use Change	Unnamed Creek; Turnberry Ridge: new development with changes to creek; Zone A; Re-assess SFHA	Identified	22A
City of Rockford	Land use Change	Unnamed Creek; Linden Pante: new development with changes to creek; Zone A; Re-assess SFHA	Identified	22B
City of Rockford	Land use Change	New development at Guildford Crossing on Keith Creek ; Re-assess SFHA	Identified	22C

**Table 11. Mitigation Projects (continued)**

<b>Community</b>	<b>Subject(s)</b>	<b>Project</b>	<b>Status</b>	<b>Comment Number</b>
City of Loves Park	Land use Change	New development at Riverside Market on Spring Creek; Re-assess SFHA	Identified	22F
City of Rockford	Land use Change	New development at Meadows of Spring Creek on Spring Creek; Re-assess SFHA	Identified	22G
City of Loves Park	Land use Change	Drainage study for possible detention for Howard Creek; proposed mitigation project	In progress	23
City of Loves Park	Land Use Change	Future development. Study needed	Identified	24A
City of Loves Park	Flood control\management	Main Drainage Ditch culvert at Perryville Road upgrade	Identified	26B
City of Rockford	Flood control\management	Overtopping of North Fork Kent Creek at Central Avenue	Identified	30
Village of Rockton	Flood control\management	Ice jam causing overtopping of Rock River adjacent to river locks	Identified	50
City of Rockford	Acquisition	Rock River Water Restoration District has bought and removed several homes	Complete	51
City of Rockford	Structure and Infrastructure Project	Rock River Morgan Street Bridge reconstruction planned for 2011; completion 2012	In Progress	52A
Winnebago Co	Flood control\management	Overtopping of North Fork Kent Creek at Wesley Willows	Identified	52E
City of Rockford Winnebago Co.\ Machesney Park	Flood control\management	Ice jam causing overtopping of Rock River at Harlem Bridge	In Progress	63A
Machesney Park	Acquisition	Machesney Park Mitigation Program-Rock River	In Progress	63D
City of Rockford	Flood control\management	Ice jam causing overtopping of Rock River at Jefferson Bridge	Identified	63E
Village of Rockton	Land Use Change	Redevelopment within Rock River floodplain; re-assess SFHA	Identified	65

## V. **Appendix and Tables**

- Appendix A: Pre-Discovery Meeting Contacts & Materials
- Appendix B: Stakeholder Contact Information & Meeting Invitations
- Appendix C: Discovery Meeting Attendance & Handouts
- Appendix D: Discovery Meeting Summary & Comments
- Appendix E: Discovery Maps
- Appendix F: Discovery Meeting Participant Feedback
- Appendix G: Comprehensive List of Study Needs
- Appendix H: Post-Discovery



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