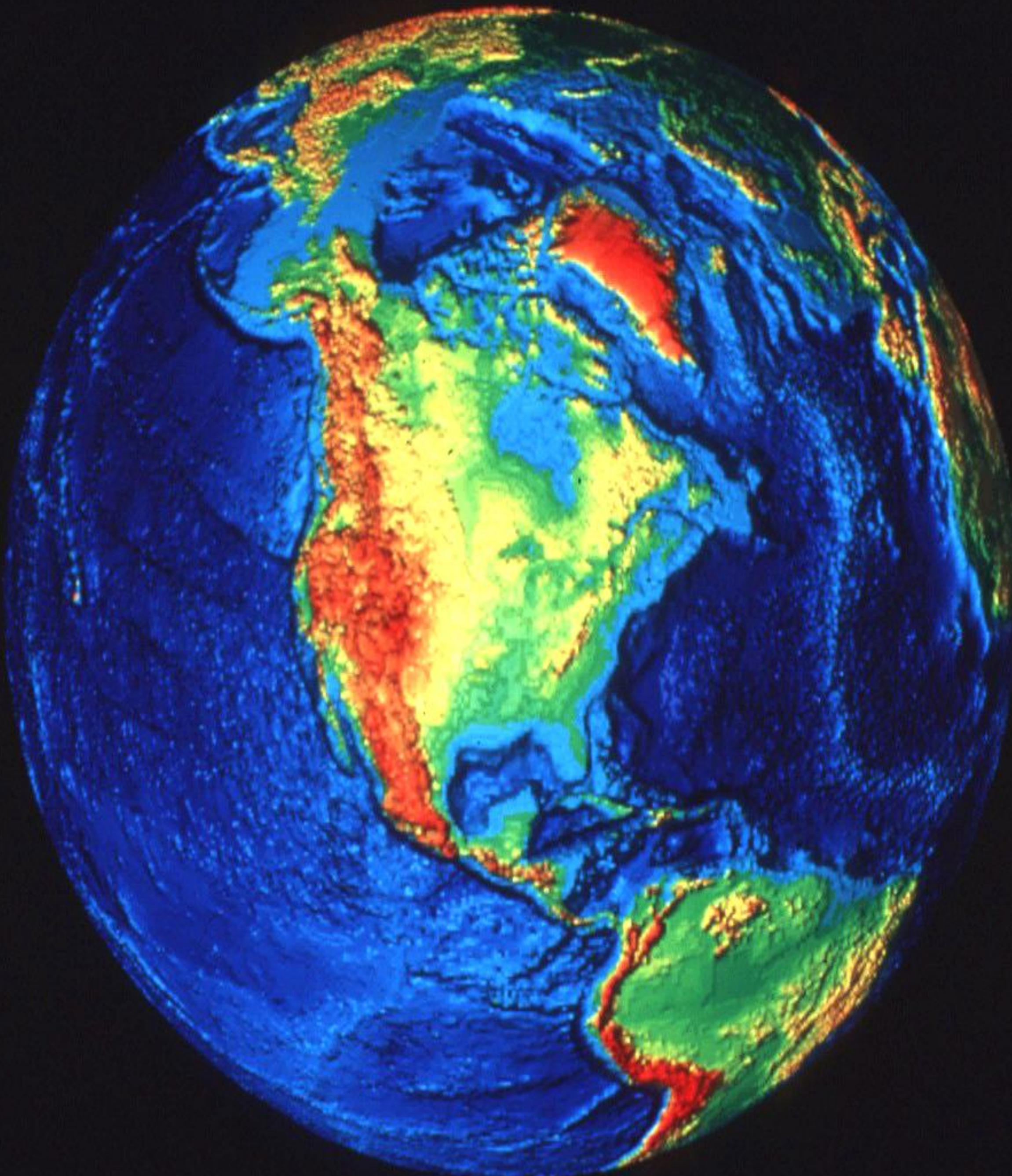


Senachwine Creek Watershed
“A Case Study
of the
Illinois River Basin Assessment Process”

October 3-4, 2007

by

William P. White
Illinois State Water Survey
Center For Watershed Science

11TH BIENNIAL GOVERNOR'S CONFERENCE ON THE MANAGEMENT OF THE ILLINOIS RIVER SYSTEM

October 3-4, 2007

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois State WATER Survey (1895)

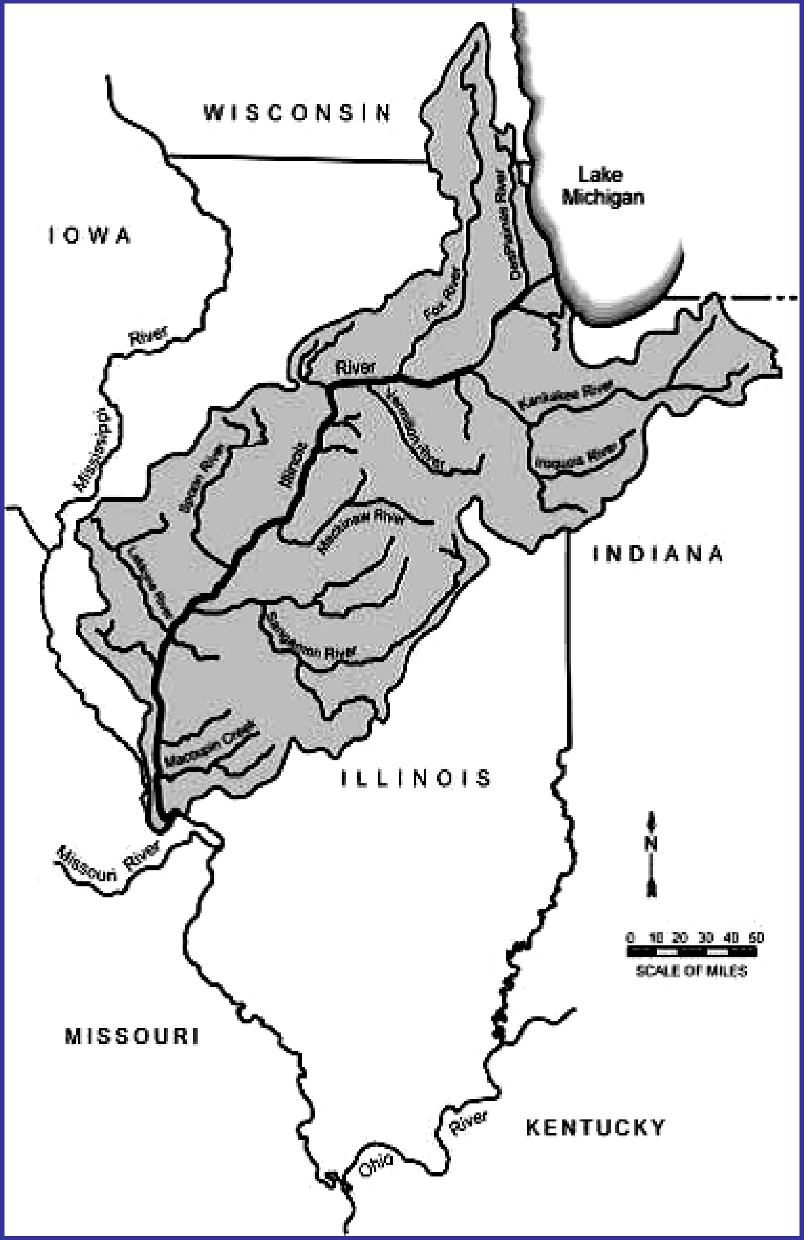
ISGS Illinois State Geological Survey

INHS

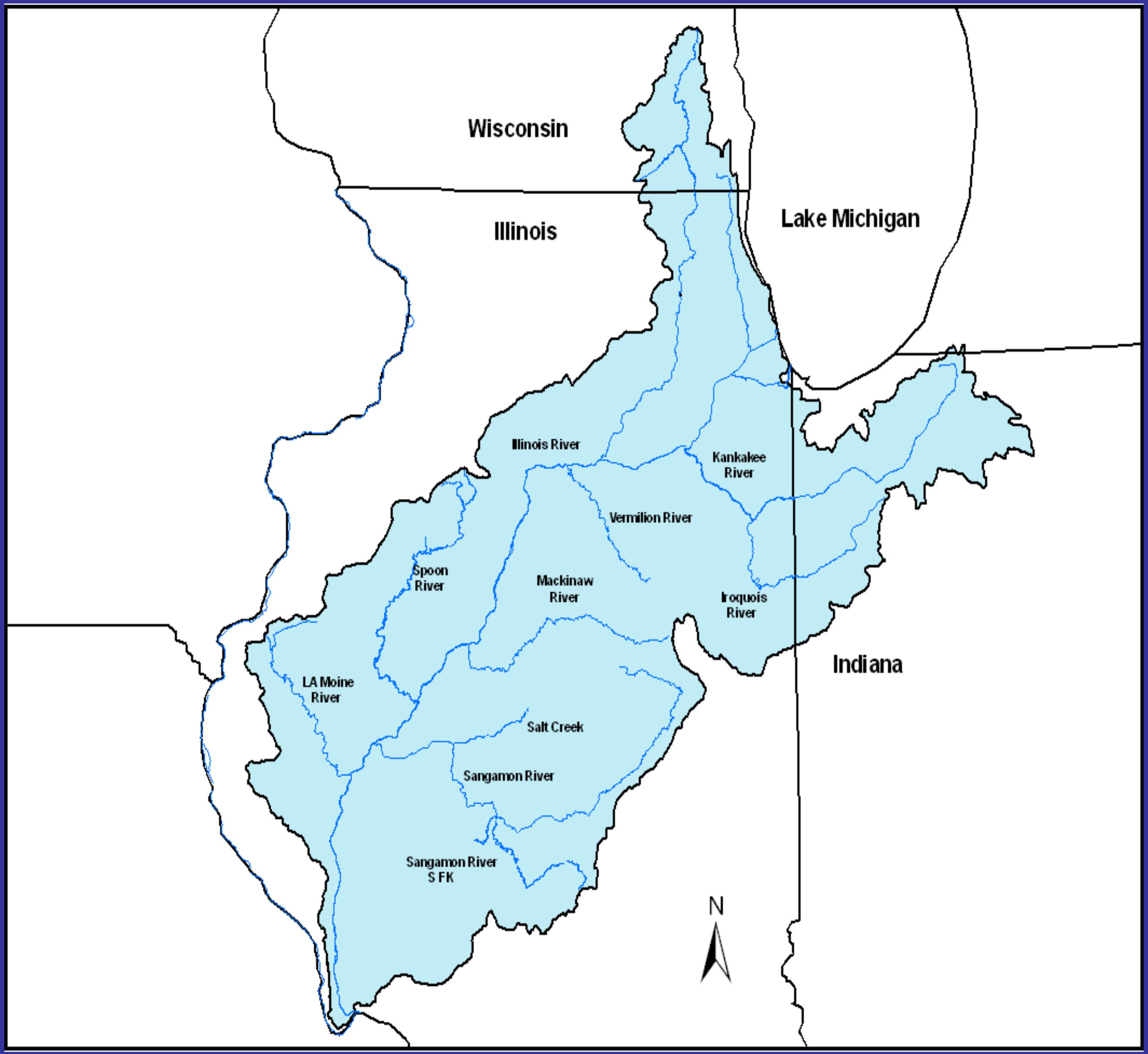
Grateful Acknowledgements

Deputy Director Leslie Sgro, Office Director Mike Conlin, Debbie Bruce, Rick Mollohan, and Jim Mick with IDNR's Office of Resource Conservation; Dr. Mike Demissie, Dr. Nani Bhowmik, Laura Keefer, John Beardsley, Long Duong, Denise Devotta, and others at IDNR's ISWS Center for Watershed Science; Dr. Drew Phillips and Bev Herzog (ISGS); Gary Loss, Brad Thompson, Marshall Plumley, and Karen Hagerty (USACE), <u>and many others</u> who contributed to the Illinois River Basin assessment efforts.

Illinois River Basin



Illinois River Basin



Illinois River Basin

- Illinois Waterway, with its system of locks and dams, is the major river basin in Illinois and links Chicago and the Great Lakes to the Mississippi River and the Gulf of Mexico.
- The river drains more than 40% of the State and contains 95% of the State’s urban areas.
- The river and the basin have been impacted by a host of natural and anthropogenic events and actions.
- Presently the State of Illinois, USACE, and a host of other institutions and organizations are working together to restore some of the natural functions of the river based on sound science including ecological principals.

Problem: Fragmentation and overall loss of habitat and ecological integrity due to…

- **Destabilization of tributary streams**
- **Sedimentation of mainstem, backwaters & side channels**
- **Floodplain alterations**
- **Water level fluctuations**

Opportunity - address the restoration needs

System-wide Goals

Overarching Goal

Restore, Enhance, and Maintain Ecological Integrity

To Do This We Must:

- Restore more natural functions in the watershed
- Reduce erosion and sediment delivery
- Restore side channels and backwaters
- Increase fish passage
- Naturalize hydrologic regimes
- Improve water & sediment quality

There is a need to better integrate geomorphic, hydrologic, biologic and other data to tie the benefits of the above activities more closely and quantitatively to their ability to improve sustainable biodiversity and overall ecosystem integrity.

Project Implementation

- Watershed and Pool Assessments
- Innovative sediment removal and beneficial use of sediments.
- Computerized inventory and database management system
- Long-term resource monitoring.

The above goals will be accomplished by following a set of planning objectives:

- Evaluate alternatives which will address common systemic problems.
- Implement projects which will address several system goals and produce independent and multi-functional, immediate, and sustainable restoration.
- Utilize the adaptive management concept in project implementation and maintenance.

Assessment Criteria

What are the Priorities?

Which Watersheds
Do We Initially Target for
Assessment and Restoration?
"16 Critical Projects Have Been
Identified to Date!"

Keep Making Decisions
Based On Results of

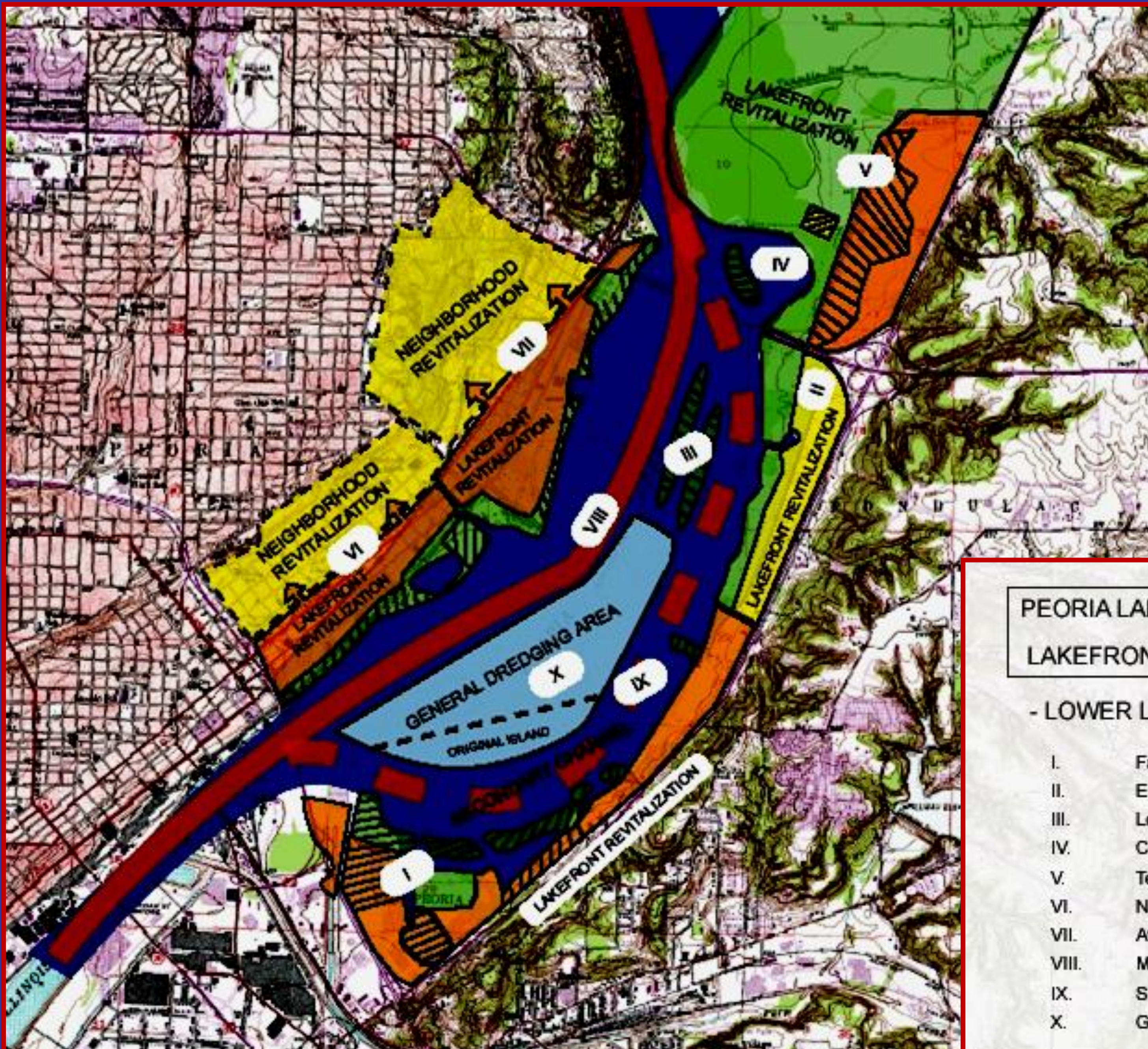
GOOD SCIENTIFIC DATA !

Criteria Selected for Establishing Initial Assessment Areas

- Sediment budget information
- Location in the basin (primarily sub-basins, watersheds and sub-watersheds draining into Peoria Pool and areas upstream and then Alton and LaGrange Pools)
- Potential to reduce sediment delivery to the IL River, increase baseflows, decrease peak flows.
- Threats to ecological quality or system integrity (population and rate of population growth/rate of change in impervious surface, water quality impairment, etc…)

Criteria Selected for Establishing Initial Assessment Areas (Continued)

- Biologically significant areas and ecosystem concerns (BSC, RRA, regionally significant species)
- Level of local support/public involvement (IL River Basin Ecosystem Restoration Regional Teams, NGO's, Conservation (Ecosystem) Partnership priorities, regional planning commissions, watershed planning groups, other local coordination groups, etc…)
- Areas where opportunities exist



PEORIA LAKES RESTORATION & LAKEFRONT REVITALIZATION

- LOWER LAKES PROJECTS -

- I. Farm Creek
- II. East Peoria Lakefront
- III. Lower Lake Islands
- IV. Christie Island
- V. Tenmile Creek
- VI. Near-Northside Lakefront
- VII. Averyville Lakefront
- VIII. Main Channel Dredging
- IX. Secondary Channel Dredging
- X. General Dredging

Landforms of Illinois

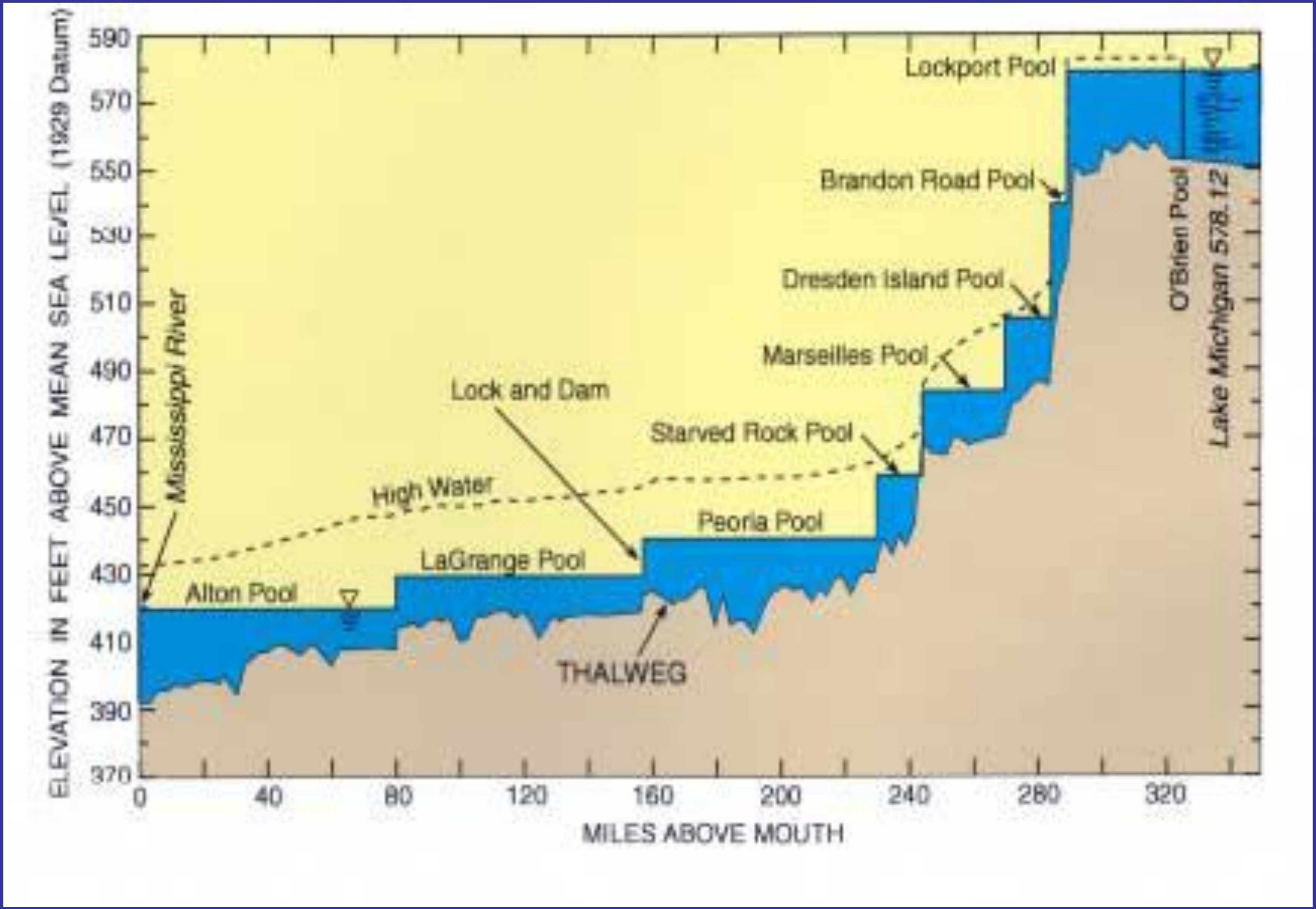
- Illinois is predominantly a glacial landscape
- Channel (streambank and streambed) areas can be a significant source of sediment transported to the Illinois River
- Erosion and sediment transport in any given year is strongly influenced by the spatial and temporal pattern of rainfall events and specifically whether or not it is a wet or dry year
- Geographic location is important for geologic reasons

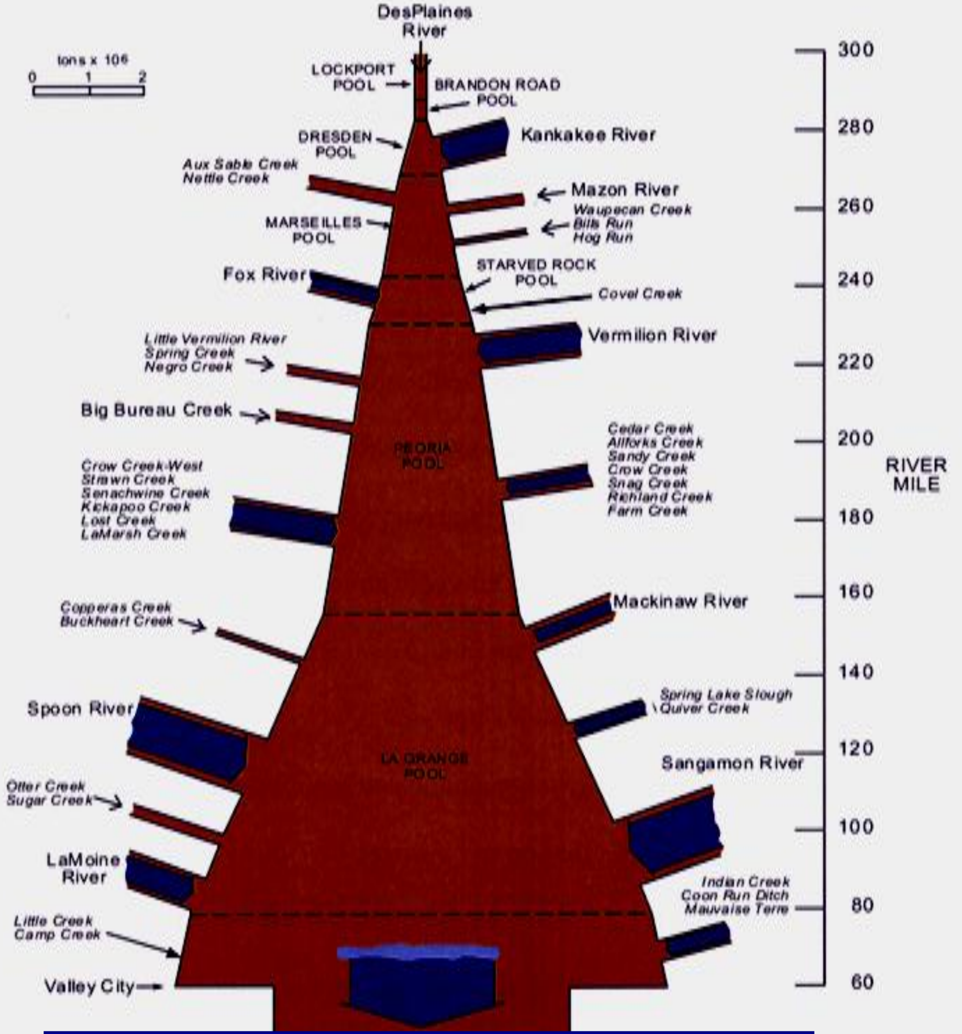
FOR EXAMPLE

- Eastern Illinois is a much younger landscape, generally flatter, and has a less integrated drainage network with more gentle tributary stream gradients than western Illinois

Illinois Surface Topography Produced by the ISGS

Profile of the Illinois River (ISWS)





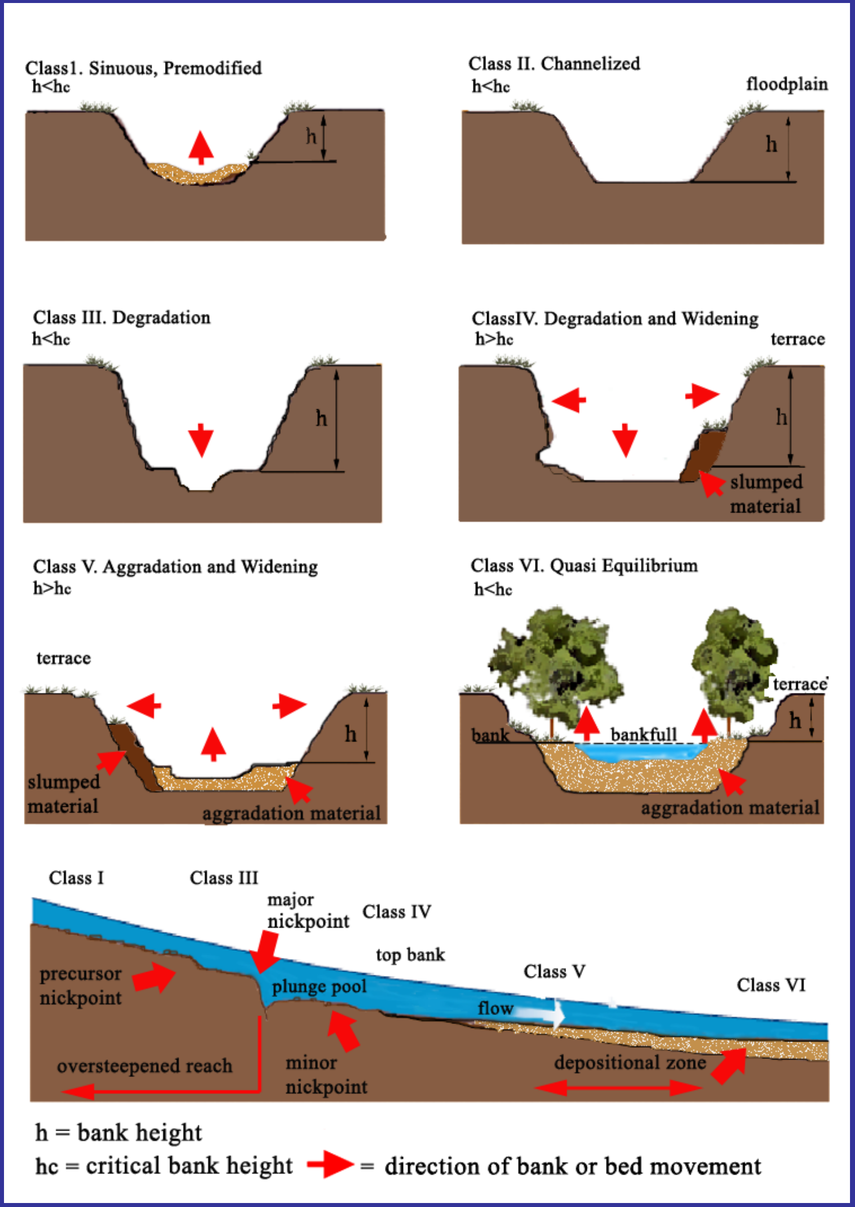
Illinois River Basin Sediment Budget

Source: M. Demissie et al., 2004:
Illinois State Water Survey

Channel and Near Channel Sources of Sediment are Significant

Aggradation and Loss of Channel Capacity in Lower Stream Reaches

Channel Evolution Model
Modified from Simon “1989”



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Riparian & Aquatic Restoration

Assessment Criteria

What are the Priorities?

What Kinds of Restoration Projects Need to be Considered Within Targeted Watersheds?

Let the Decisions Be Based On Applying:

GOOD SCIENTIFIC DATA !

Criteria For Selecting Project Sites

- Sediment contributions from the watershed and specifically from the site in question
- Watershed plan or planning progress
- Landowner willingness to accept and support a project
- Availability of access
- Future potential damages and federal, state, and local ability to stabilize potential project areas
- Economic opportunities (**INCENTIVES-as in Spoon River with EQIP & CREP**) or limitations at the federal, state, and local level

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Criteria For Selecting Project Sites

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- Economic opportunities or limitations at the federal, state, and local level

Stream & Riparian Restoration Practices
"Short List"

- Bioengineering (sometimes combined with Lunkers and even harder structures) to Stabilize or Naturalize Streambanks and address Channel Equilibrium Issues
- Control of Channel Incision using Riffle/Pool Structures (Newbury Weirs, etc…
- Remeandering
- Reconnection of Streams to Floodplains
- Wetlands Restoration or Enhancement
- Hydrologic Restoration or Naturalization of Flow Regimes (Mainstem, Tributary Streams, & Watersheds)
- Alternative Futures Planning--Conservation Development Designs
- Etc…

Stream & Riparian Restoration Practices
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- Etc…

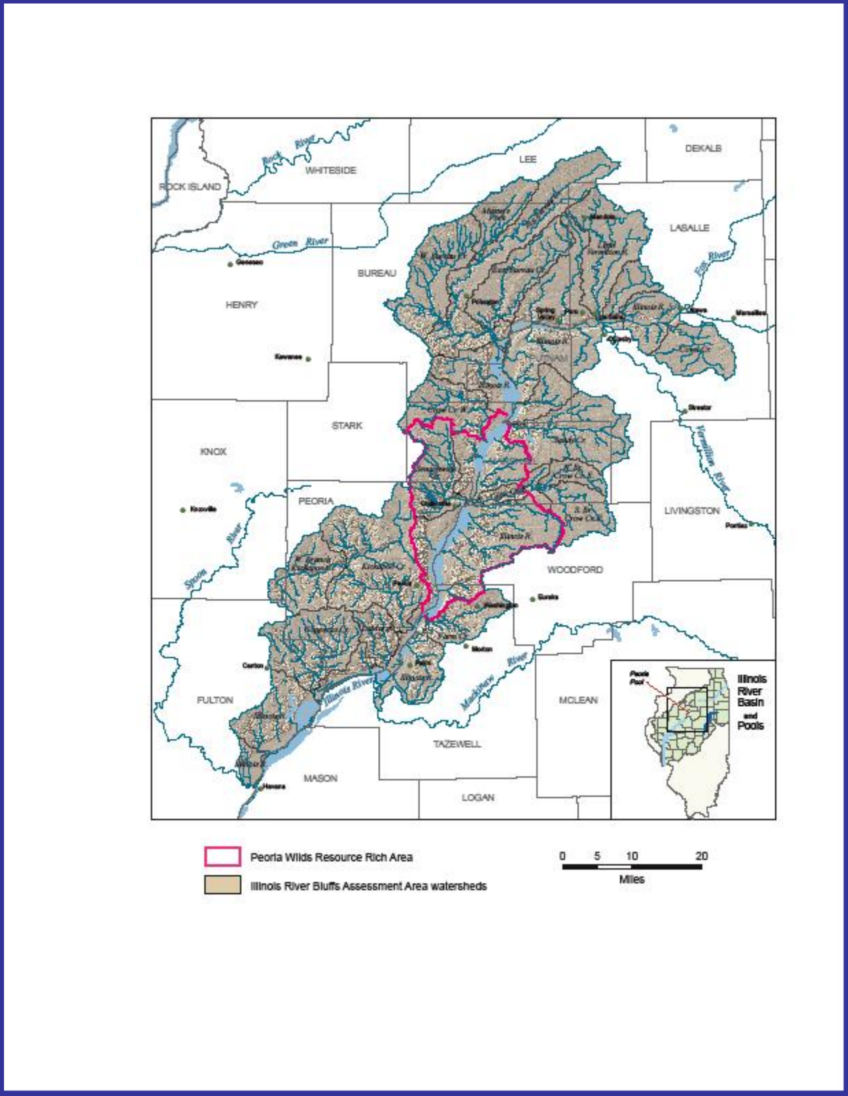
Watershed Assessment Data Collection Protocols
"Streams and Watershed Component"

For Identification, Assessment and Monitoring of Targeted Streams & Watersheds

- General Assessments:
  - -- GIS Coverage
    - -- Biologically Significant Areas (including but not limited to Resource Rich Areas, Nature Preserves, Natural Areas, Open Space, T&E Species, Invasive Species, etc…),
    - -- Bedrock, Surficial Geology, Sands, Slopes, Soils, etc…
    - -- Historic Photo Interpretation
    - -- Landcover Analysis & Modeling
    - -- Hydrologic & Hydraulic Modeling
    - -- Etc…
- Geomorphological System Scale Assessments
  - -- Channel Stability Ranking Scheme
  - -- Biological/Habitat Ranking Scheme

Senachwine Creek Watershed

(located within the boundary of "Peoria Wilds" and also within the "Illinois River Buffs Ecosystem Partnership" Area)



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Watershed Assessment Data Collection Protocols
“Streams Component”

For Data Collection of Specifically *Targeted Streams*

- Aerial Reconnaissance Using GPS Technology
  - -- Rapid Geomorphological Assessment
    - -- Geomorphological Assessment Stream-Evaluation Data Sheets
- Methodology & Protocols for the Index of Biotic Integrity (IBI)
- Methodology & Protocols for the Macro-Invertebrate Surveys (MIBI)
- Methodology & Protocols for the Instream Habitat Monitoring
  - -- Potential Index of Biotic Integrity (PIBI)

Restoration Practices "Short List"

- Alternative Futures Planning--Conservation Development and Contemporary Stormwater Management Designs (neo-traditional development; i e., rain gardens)
- Hydrologic Restoration or Naturalization of Flow Regimes (Mainstem, Tributary Streams, & Watersheds) to Stabilize or Naturalize Streambanks and address Channel Equilibrium Issues (infiltration, retention-detention, bioengineering ,etc…)
- Bioengineering (Willow Post, Live Stakes, Live Fascines, Vegetated Geogrids, Silt-Capture Structures, Live Booms, etc…sometimes combined with Lunkers and even harder structures)
- Control of Channel Incision using Riffle/Pool Structures (Newbury Weirs, etc…)
- Remeandering and Reconnection of Streams to Floodplains
- Wetlands Restoration or Enhancement
- Hard Streambank Erosion Control Structures such as Sheet Piling; Rip-Rap, Stone Toe Protection or Longitudinal Peak Stone; Bendway Weirs, Stream Barbs, Concrete Lining, etc…)

Field Survey

Channel Stability Ranking

Adapted from Kuhnle and Simon (2000)

CHANNEL-STABILITY RANKING SCHEME*

Station # ____________ **Station Description:** ______________________________

Date: ____________ **Crew:**______________ **Samples Taken:** ________________

Pictures: U/S D/S X-section LB RB

Pattern: Meandering Straight Braided Drainage Ditch**

Field Measurements: Reach length:________________ Est. Reach Slope:_____________

Avg channel widths: (top)______(bottom)______ Avg/Max channel depth:_______/_______

LB angle (avg):______________ RB angle (avg):____________

Primary bank material:______________ Primary bed material: *(See #1)*

(GP=gravel; SP=sand; ML=silt; CL=clay; BR=bedrock)

1. Primary bed material

	Bedrock	*Boulder/Cobble*	*Gravel*	*Sand*	*Silt/Clay*
	0	1	2	3	4

2. Bed Protection

a)	*Yes*				
OR	0		*#Banks*		
b)	*No*	*(with)*	*Protection*	*One (L or R)*	*Both*
	1			2	3

3. Degree of floodplain separation/incision** (Relative elevation of "normal" low water; floodplain/terrace @100%)

0-10%	*11-25%*	*26-50%*	*51-75%*	*76-100%*
4	3	2	1	0

4. Degree of constriction (Relative decrease in top-bank width from up to downstream)

0-10%	*11-25%*	*26-50%*	*51-75%*	*76-100%*
0	1	2	3	4

5. Streambank erosion (each bank for reach length)

	None	*Fluvial*	*Mass wasting (failures)*
Left	0	1	2
Right	0	1	2

6. Stream bank instability (Percent of each bank failing for reach length)

	0-10%	*11-25%*	*26-50%*	*51-75%*	*76-100%*
Left	0	0.5	1	1.5	2
Right	0	0.5	1	1.5	2

7. Established woody vegetative cover (Percent of each bank face for reach length)

	0-10%	*11-25%*	*26-50%*	*51-75%*	*76-100%*
Left	2	1.5	1	0.5	0
Right	2	1.5	1	0.5	0

8. Occurrence of bank/bar accretion (Percent of each bank with fluvial deposition for reach length)

	0-10%	*11-25%*	*26-50%*	*51-75%*	*76-100%*
Left	2	1.5	1	0.5	0
Right	2	1.5	1	0.5	0

9. Stage of Channel Evolution

I	*II*	*III*	*IV*	*V*	*VI*
0	1	2	4	3	1.5

OTHER OBSERVATIONS:

Total Score:

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Field Survey

Biological Ranking Scheme

Adapted from Kuhnle and Simon (2001)
and
Barbour et al. (1999; Chapter 5/USEPA)

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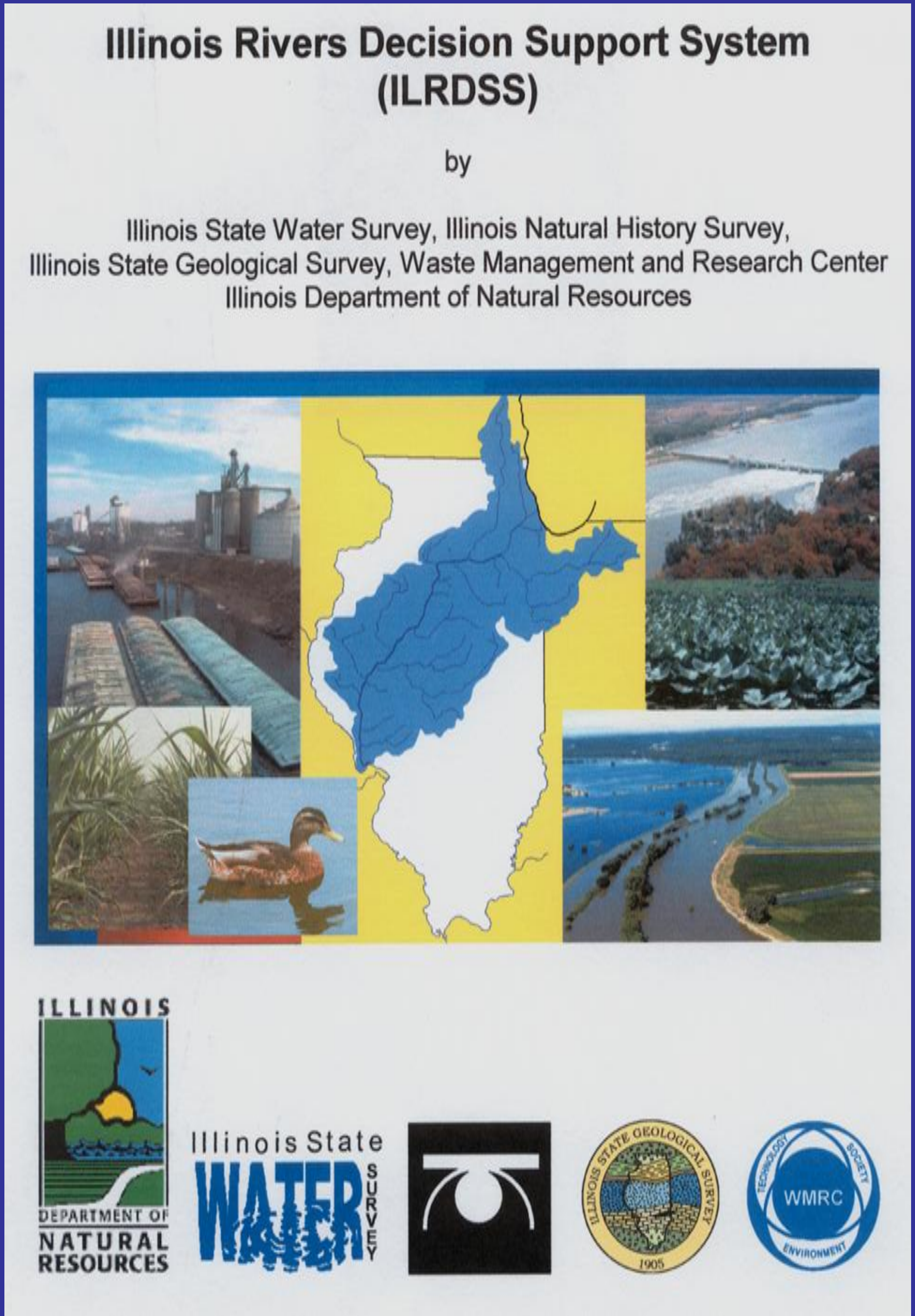
1. Availability of favorable habitat *(snags, submerged logs undercut banks; average of LWD and detritus)*					
	>50%	*30-50%*	*10-30%*	*<10%*	
	4	3	2	1	
2. Pool-substrate composition					
	GP & firm SP	*Soft SP & ML-CL*	*All ML-CL or All SP*	*Hardpan/ Bedrock*	
	4	3	2	1	
3. Pool-variability character					
	Mix large/small & deep/shallow	*Majority large-deep pools*	*Shallow pools more prevalent*	*Majority small-shallow or absent*	
	4	3	2	1	
4. Active streambed/bar deposition					
	0-20%	*21-50%*	*51-80%*	*81-100%*	
	4	3	2	1	
5. Streambed exposure					
	0-5%	*5-25%*	*25-75%*	*75-100%*	
	4	3	2	1	
6. Degree of “hard” channel alteration (channelization, dredging, embankments/shoring structures, gabion/cement)					
	Channelization/dredi ng absent	*Minor or historic*	*40-80% reach disrupted*	*>80% Disrupted/ habitat altered*	
	4	3	2	1	
7 (low). Sinuosity					
	3-4	*2-3*	*1-2*	*Straight*	
	4	3	2	1	
7 (high). Pool-riffle sequence (% Pool + % Riffle)					
	>80%	*51-80%*	*20-50%*	*<20%*	
	4	3	2	1	
8. Bank Instability (Percent each bank failing)					
	0-5%	*6-30%*	*31-60%*	*61-100%*	
Left	2	1.5	1	0.5	
Right	2	1.5	1	0.5	
9. Vegetative Bank Protection (Bank face):					
	>90% covered w/mix of veg.	*70-90% cover*	*50-70% cover; disruption obvious; bare patches*	*<50% veg disruption high*	
Left	2	1.5	1	0.5	
Right	2	1.5	1	0.5	
10. Riparian-zone width (out from edge of water)					
	>20m	*10-20 m*	*5-10 m*	*<5m*	
Left	2	1.5	1	0.5	
Right	2	1.5	1	0.5	
				Total Score:	


Illinois Rivers Decision Support System (ILRDSS)

by

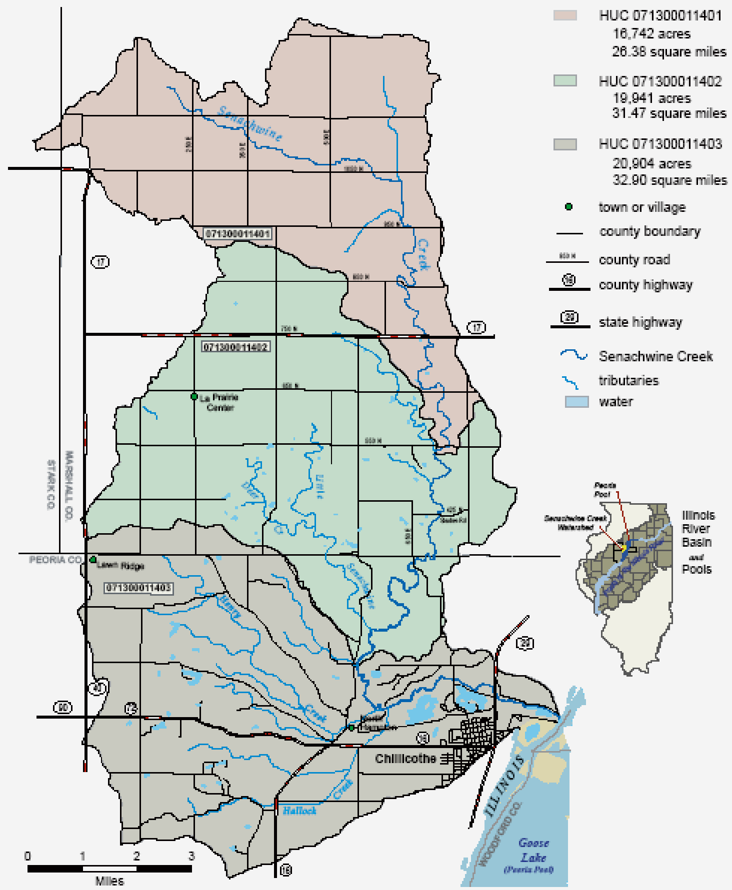
Illinois State Water Survey, Illinois Natural History Survey,
Illinois State Geological Survey, Waste Management and Research Center
Illinois Department of Natural Resources

Senachwine Creek Watershed

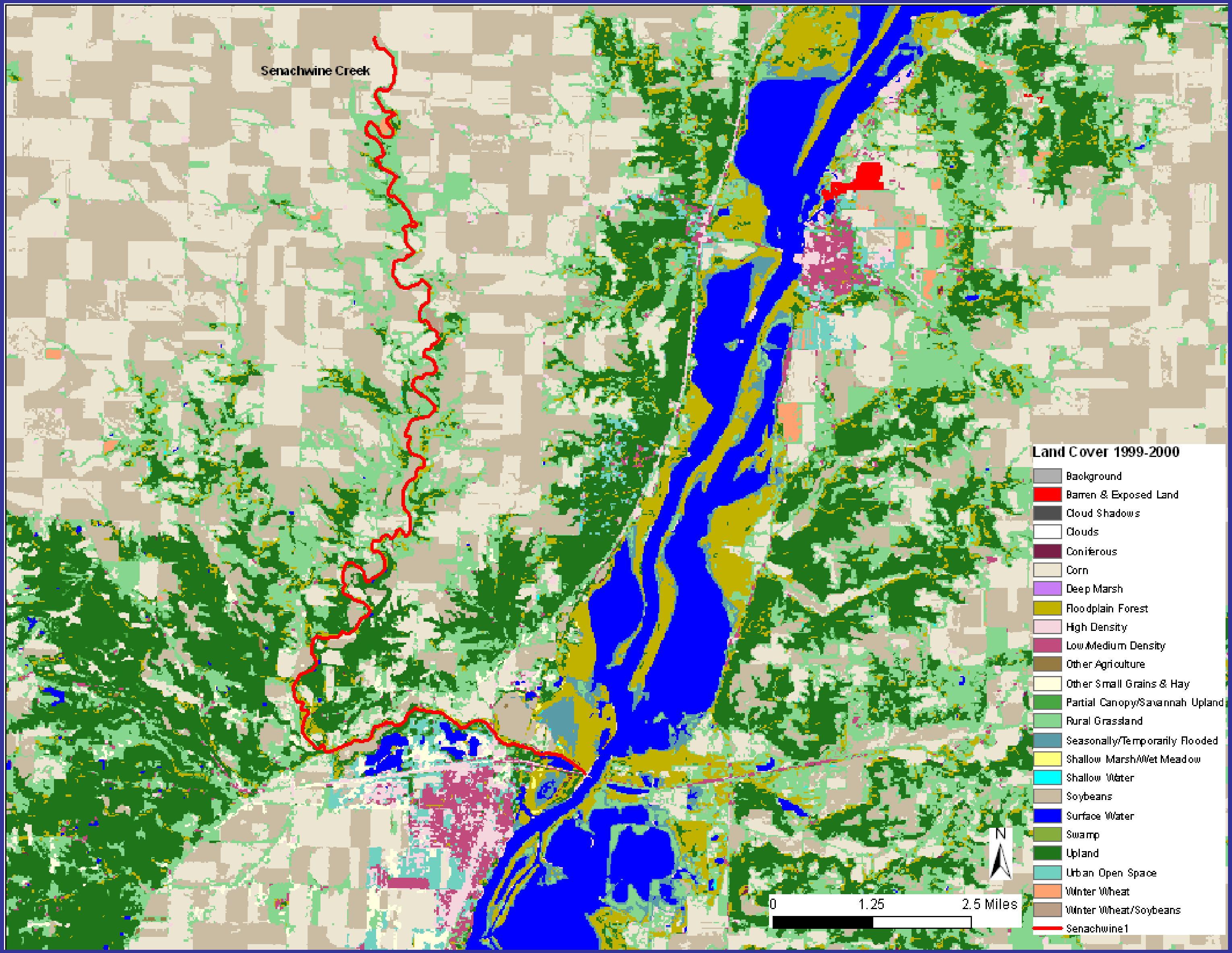
A Case Study of the Illinois River Basin Assessment Framework

Senachwine Creek

Location & Hydrologic Units



Senachwine Creek Watershed Landcover



Illinois State WATER SURVEY

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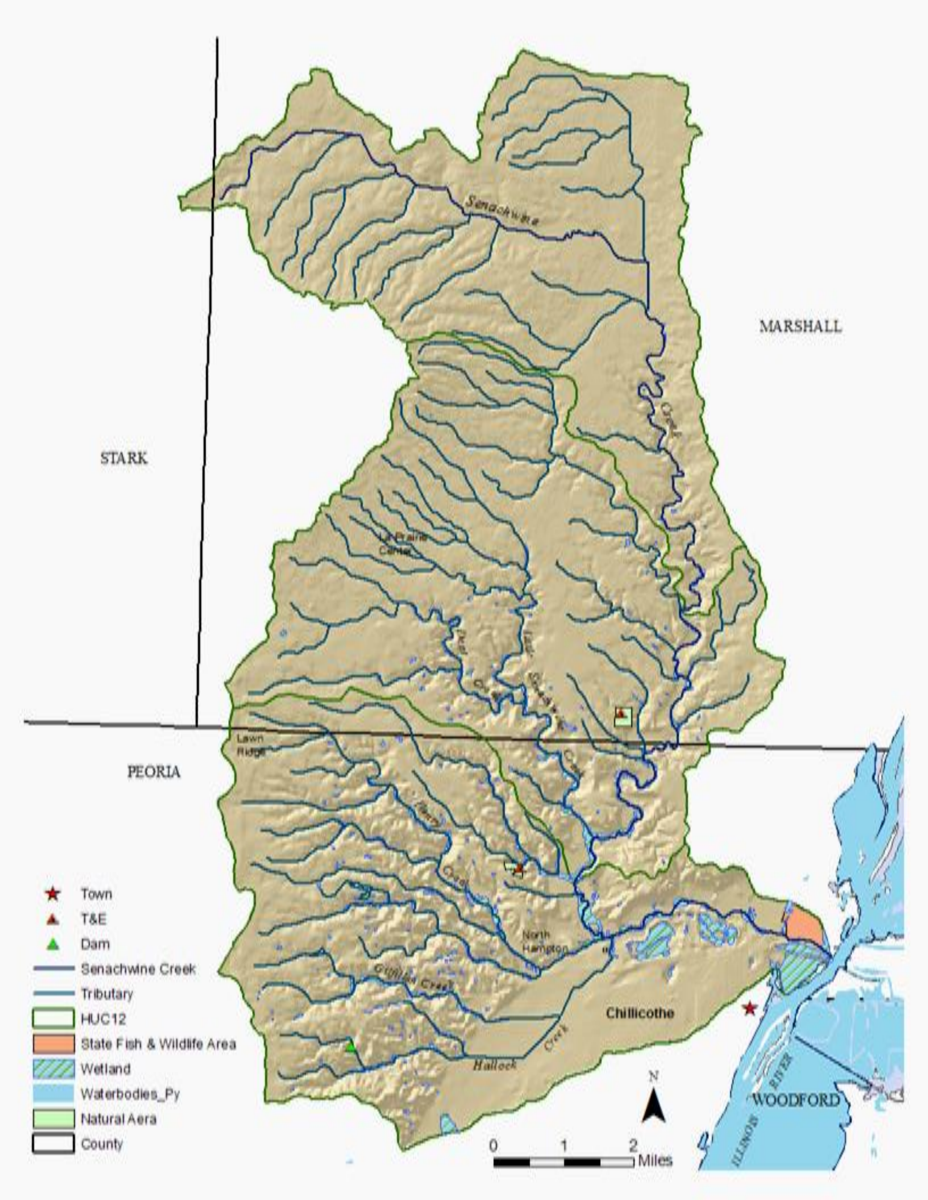
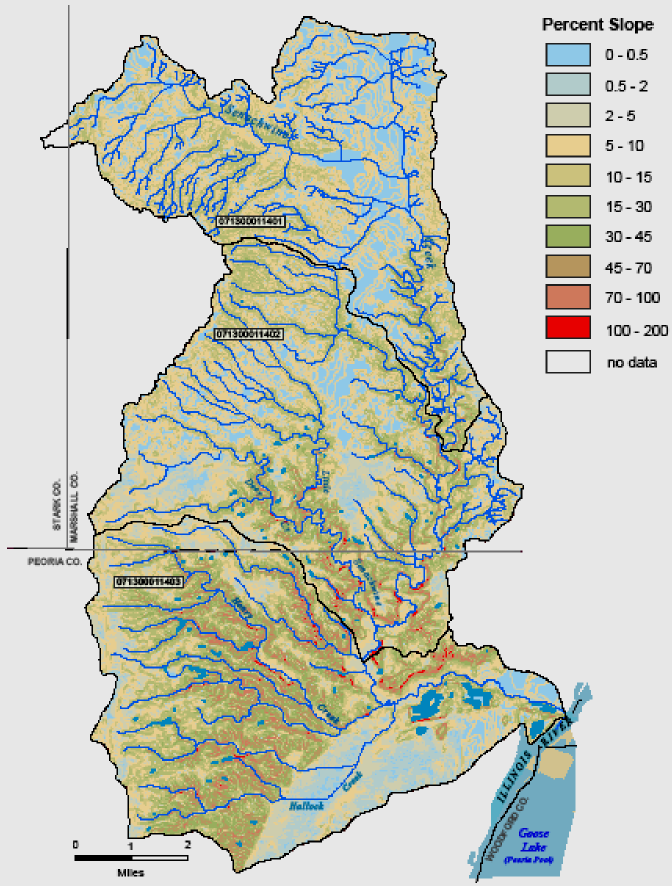
Senachwine Creek

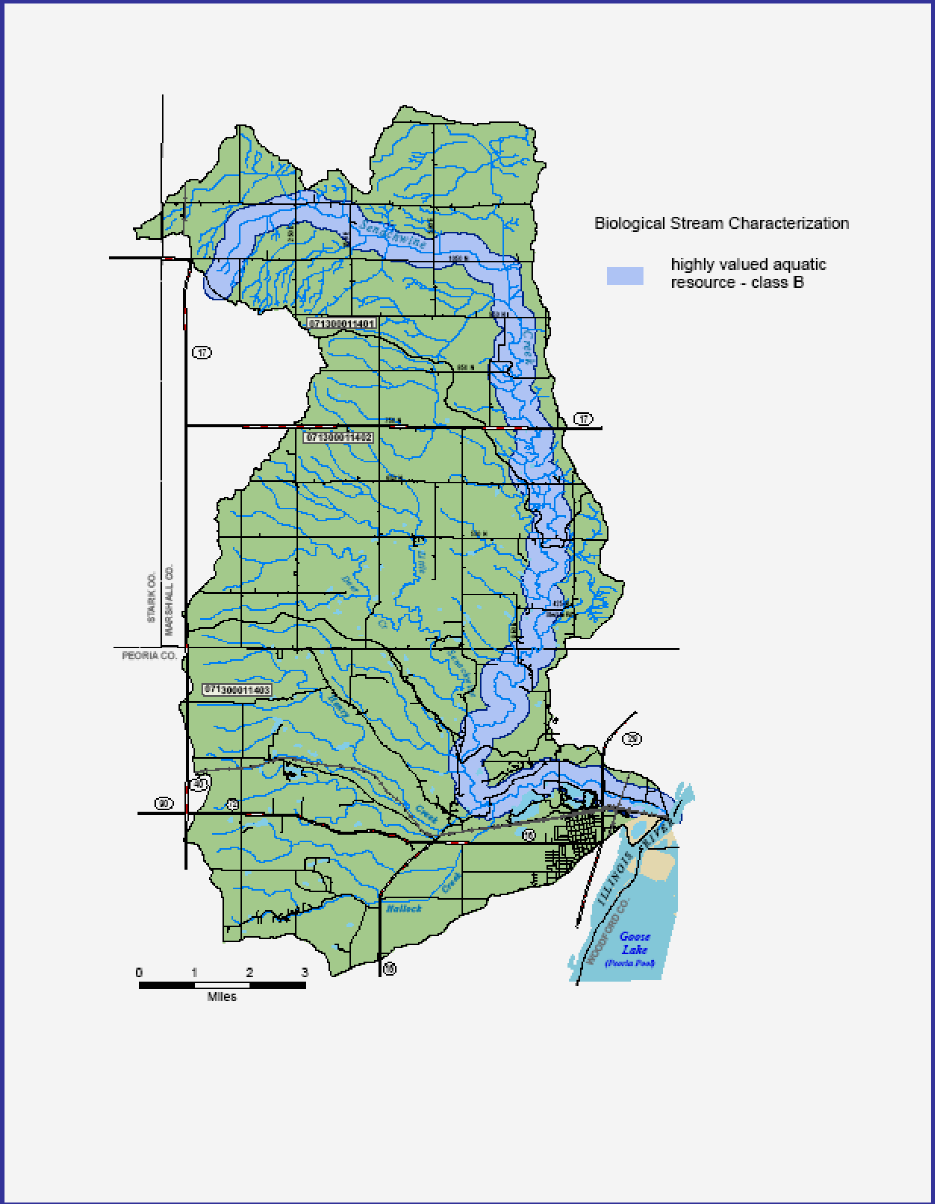
Drainage Network



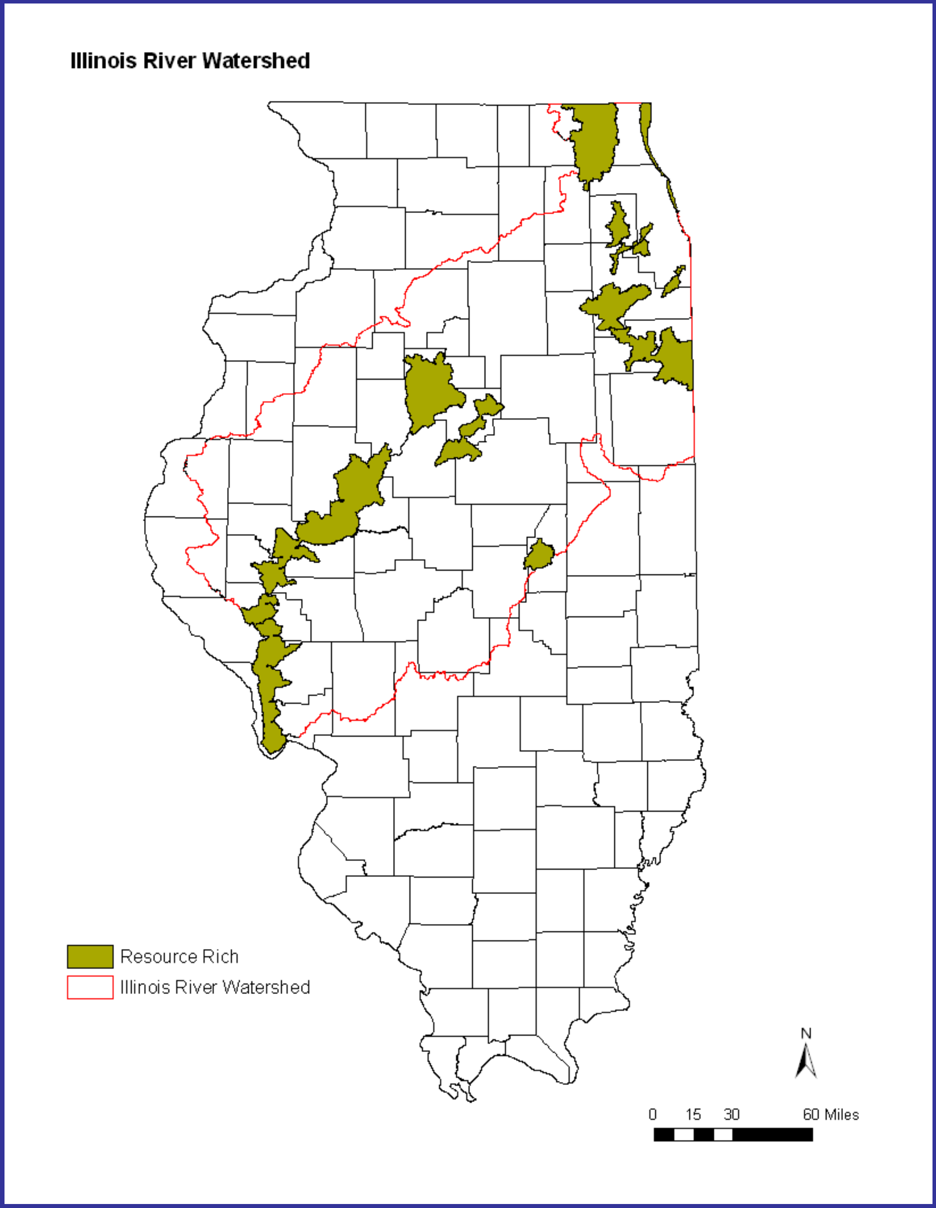
Slope of the Senachwine Creek Watershed



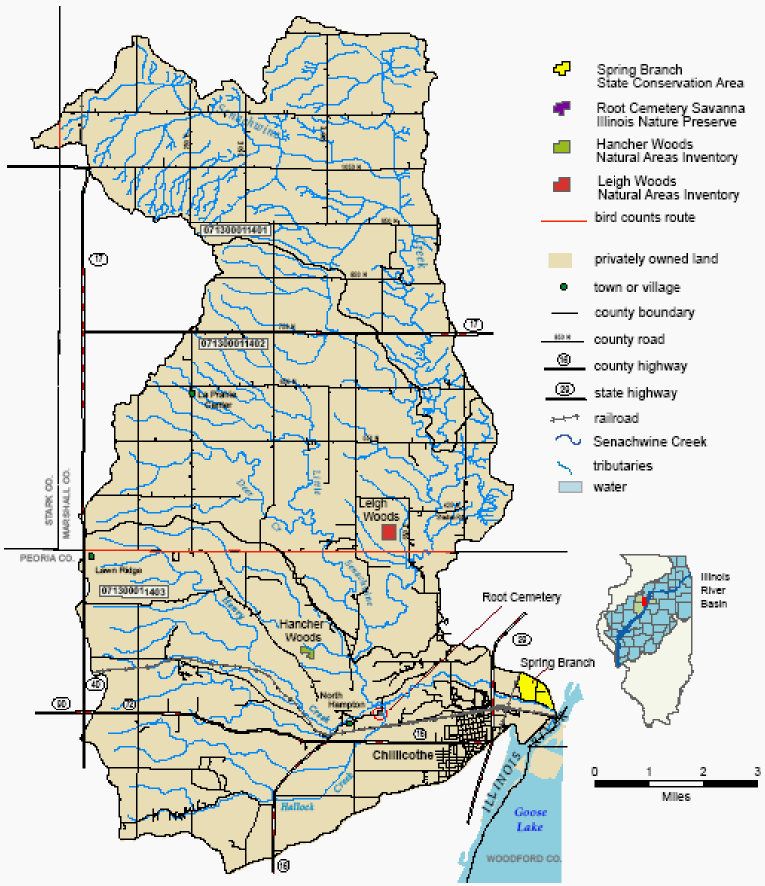
Senachwine Creek Mainstem
Biological Steam Characterization



Resource Rich Areas In The Illinois River Basin



Publicly Managed Lands in the Senachwine Creek Watershed



Place holder missing parklands

Figure xx. Managed lands in the Senachwine Creek Watershed

Senachwine Creek Watershed

Occurrence of Jules and Paxico Soils (Recent Floodplain Deposits)

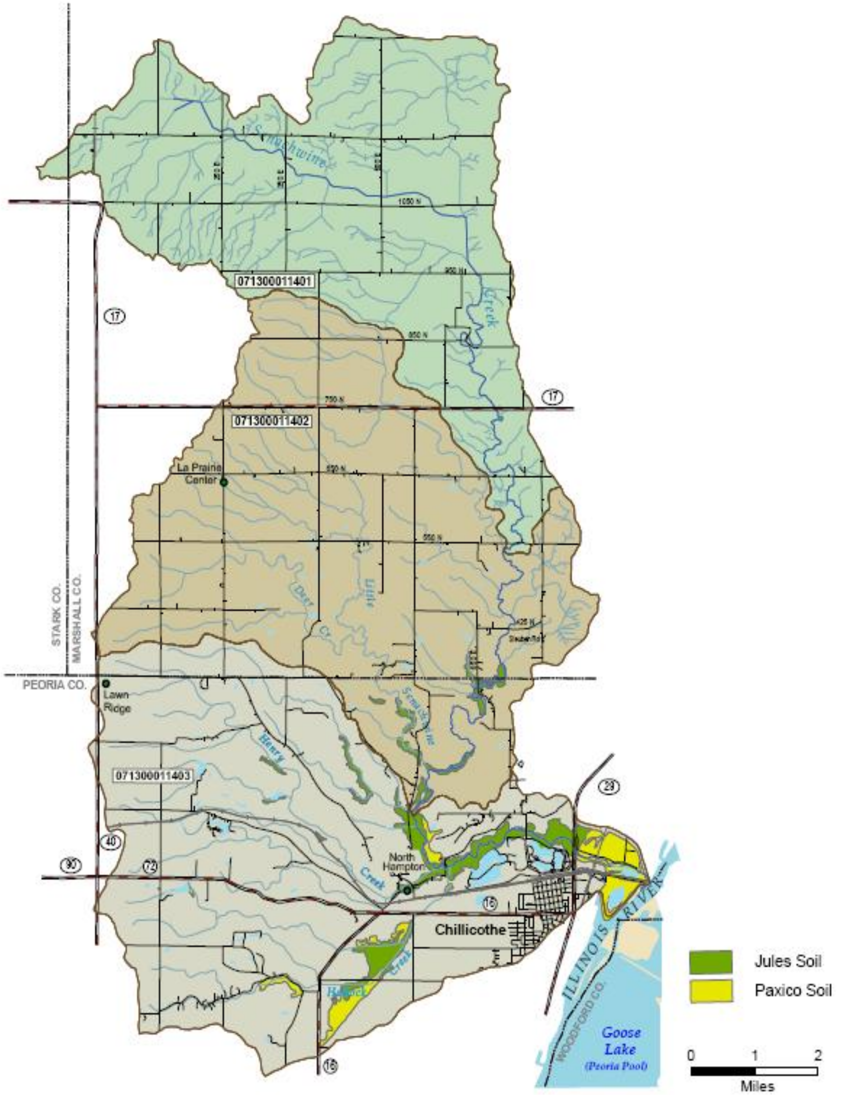


Figure JulPax. Occurrence of Jules and Paxico soils indicates recent floodplain deposition

Senachwine Creek Watershed

Parent Materials

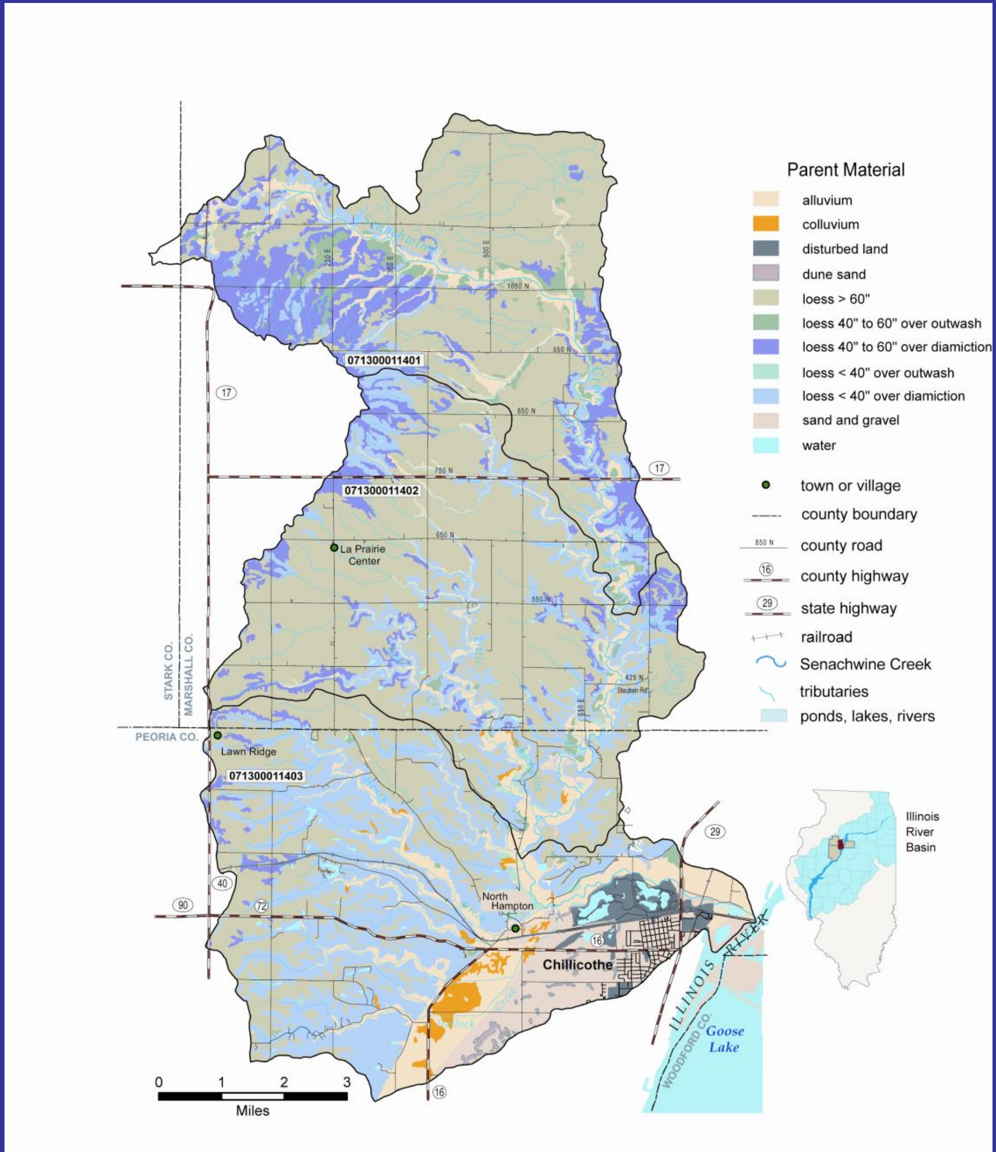


Figure xx. Parent Materials of the Senachwine Creek Watershed

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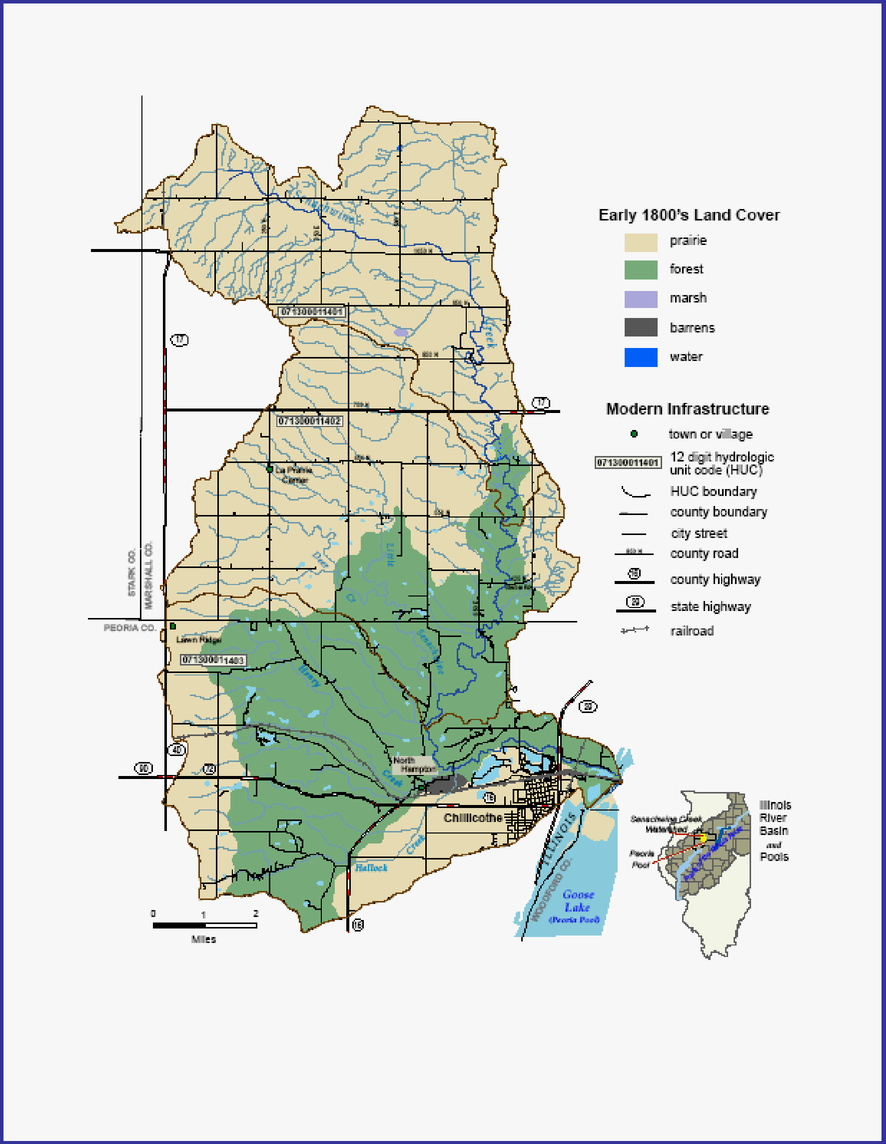
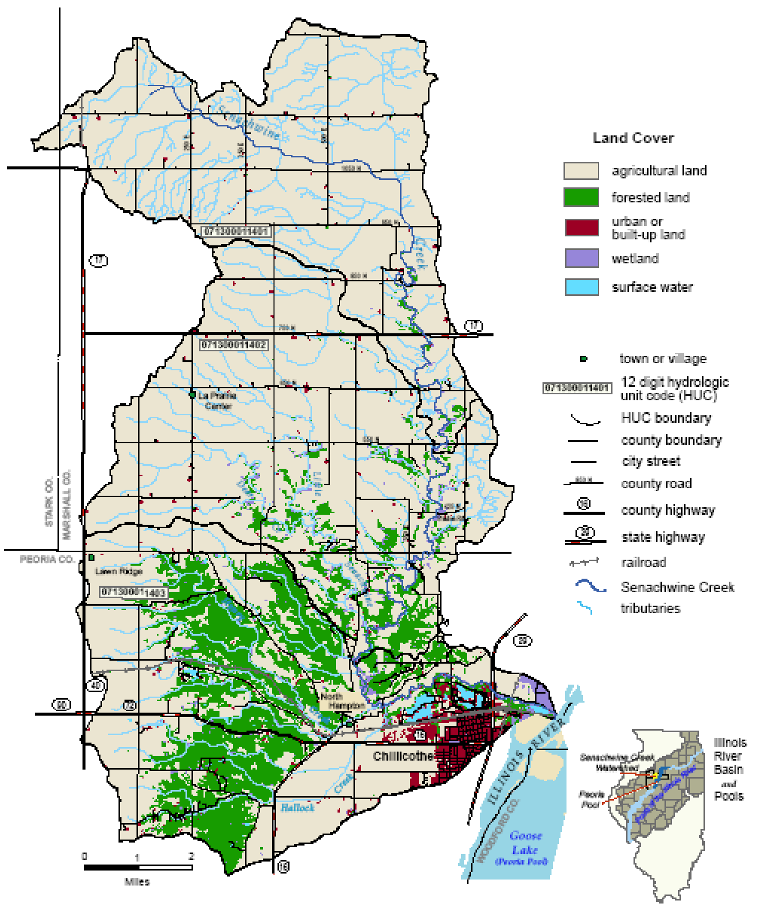
Senachwine Creek Watershed
Physiographic Features

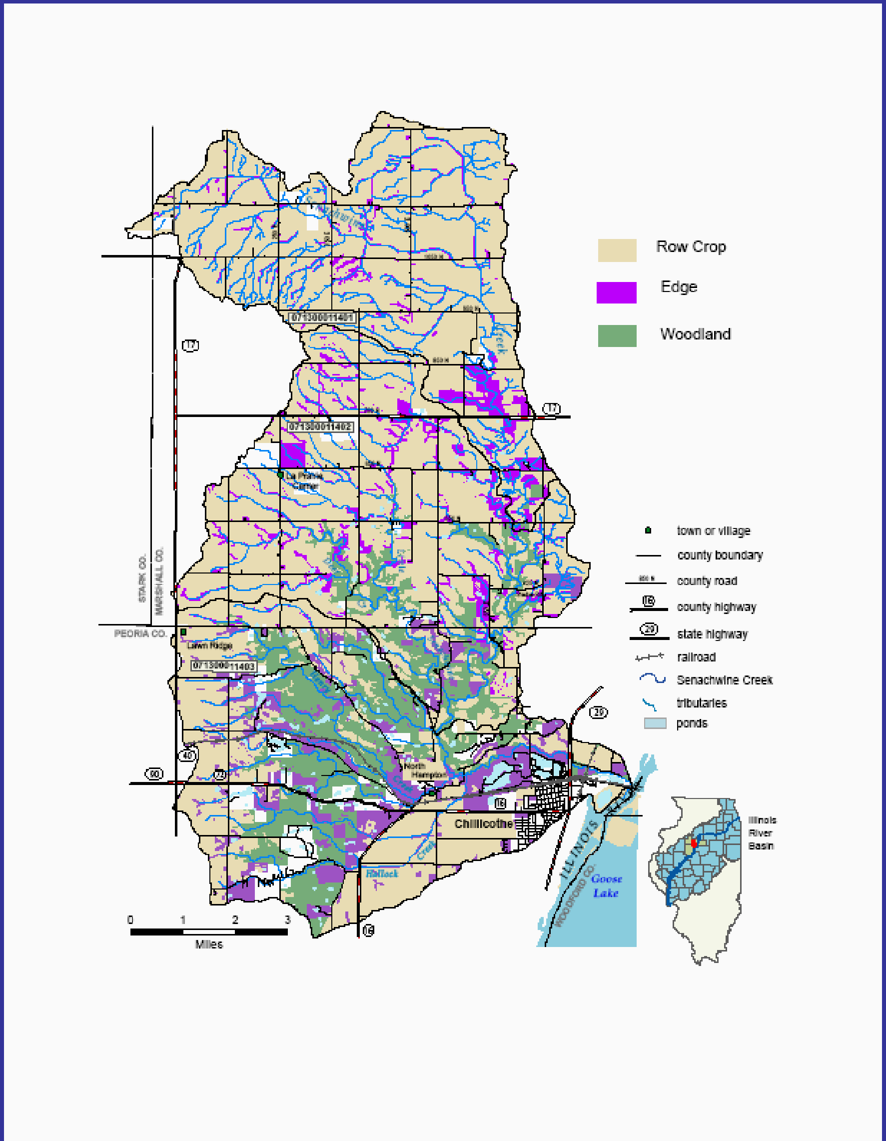
Landcover in Senachwine Creek in Early 1800's



Current Landcover in Senachwine Creek Watershed

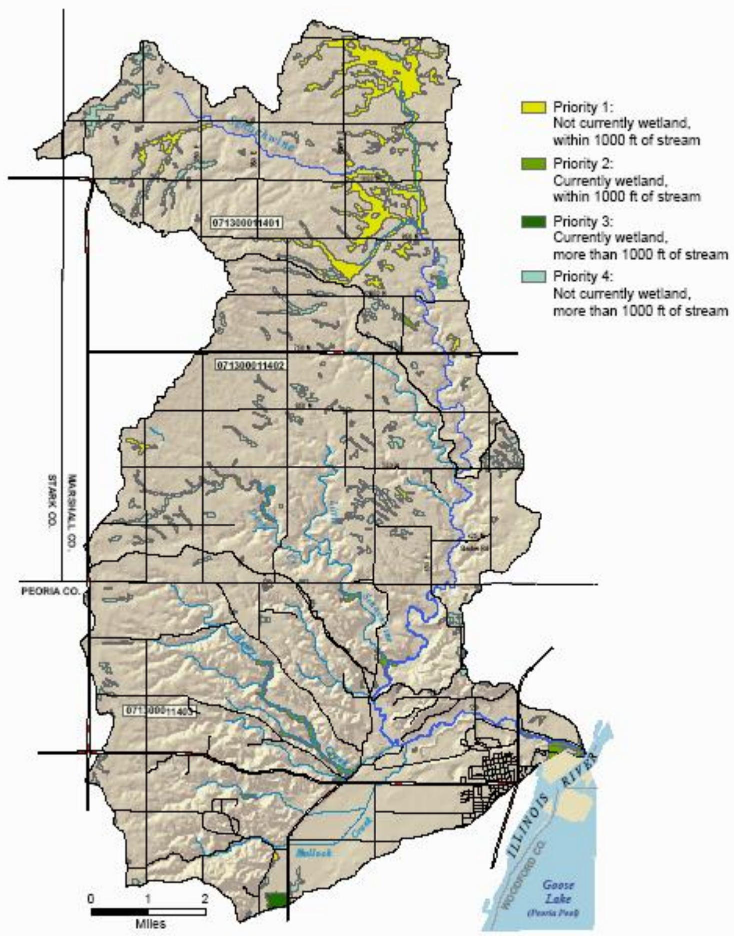


Row Crop--PLUS
Edge "Effect," and Forest



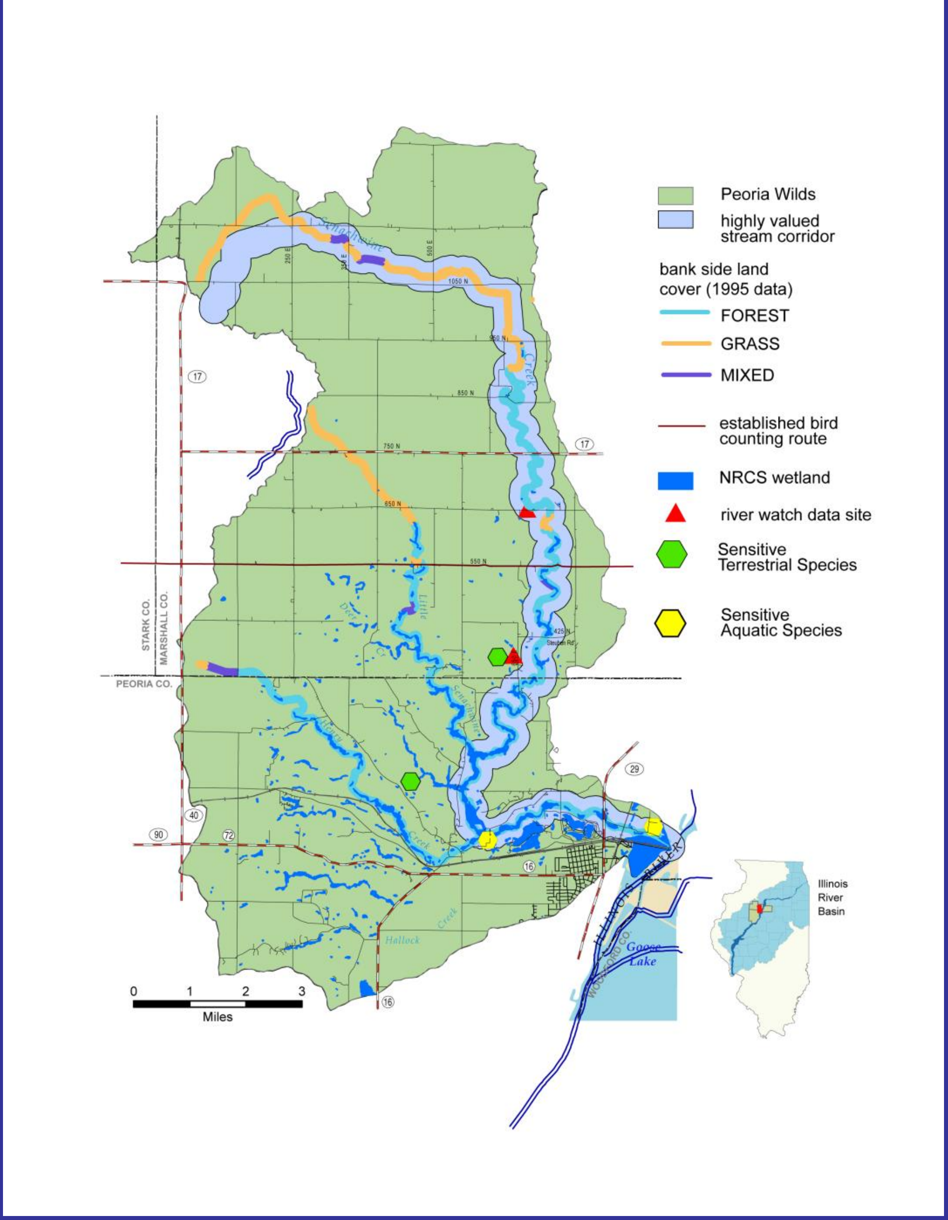
Senachwine Creek

Hydric Soils



Senachwine Creek Watershed

Riparian and other Special Features



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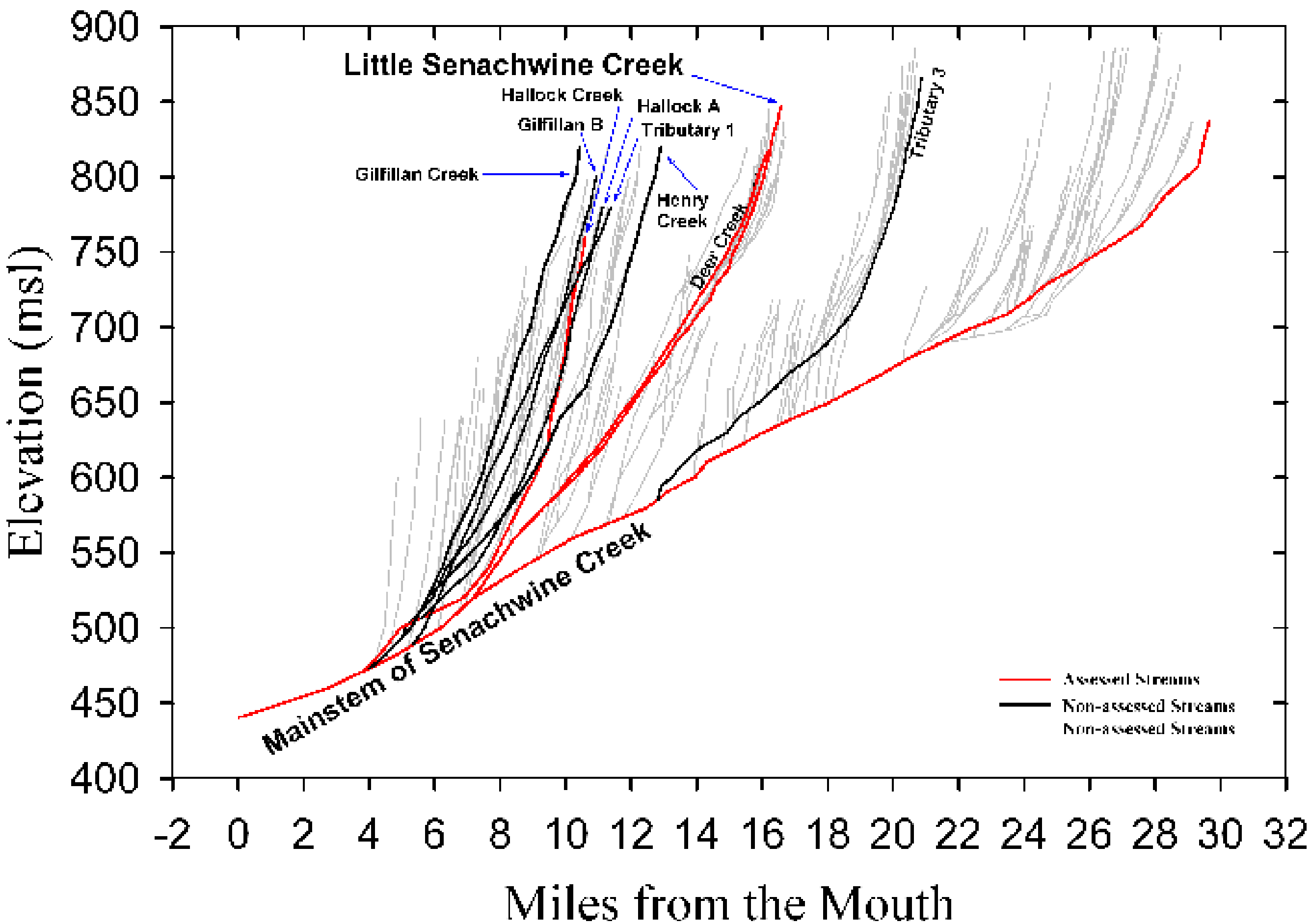
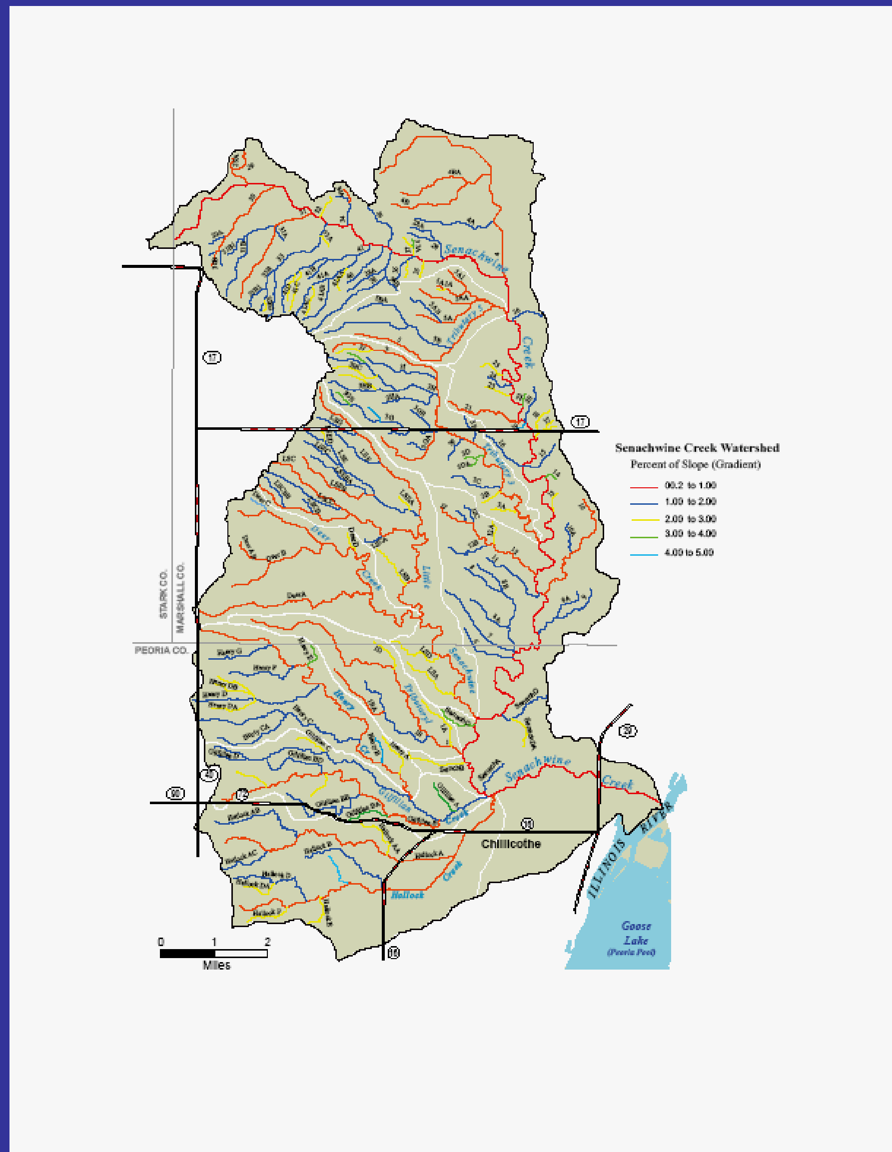
Senachwine Creek and Tributaries
Longitudinal Gradients

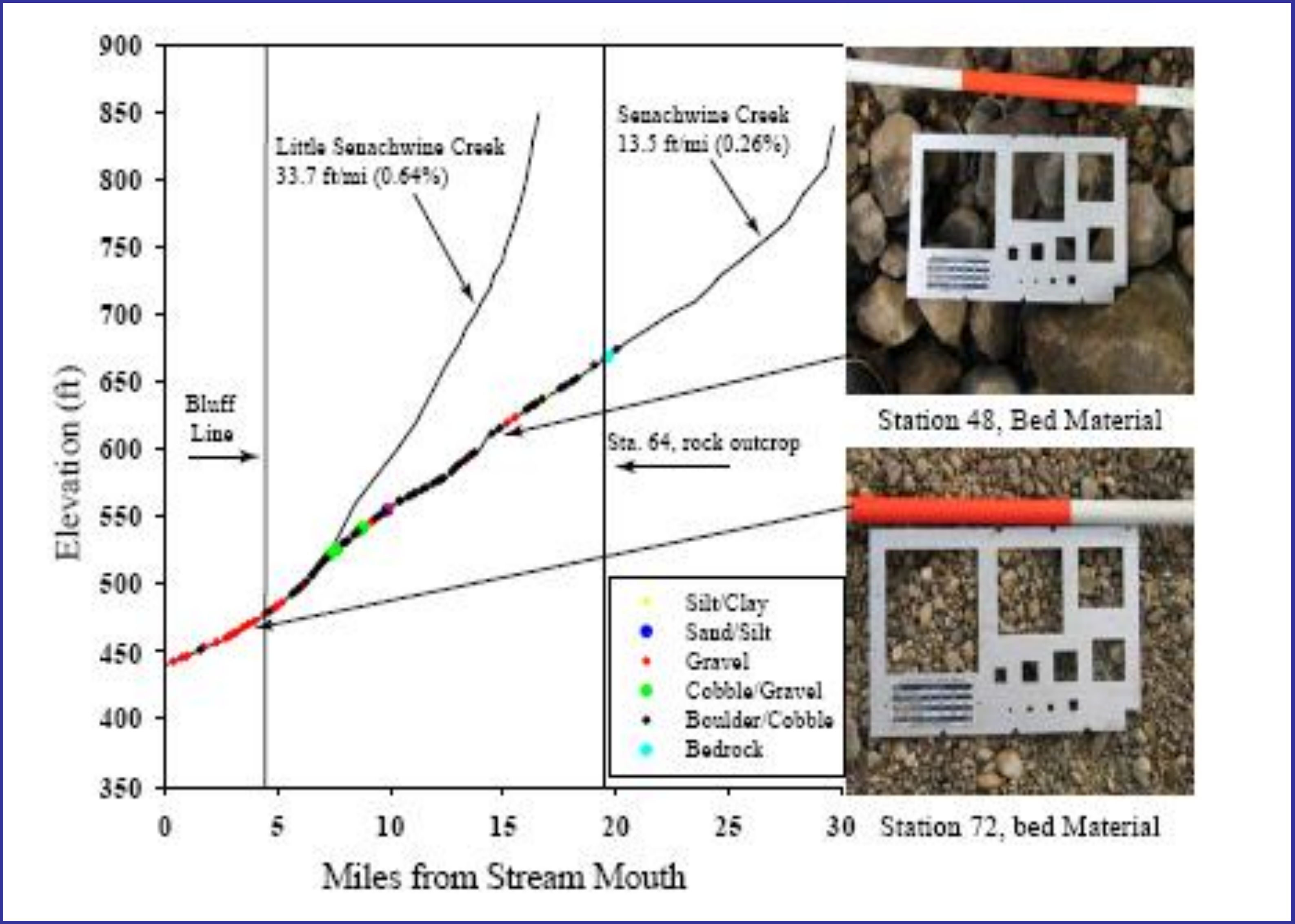


Senachwine Creek Watershed

Percent Gradients = (0.2 - 4.8 %)

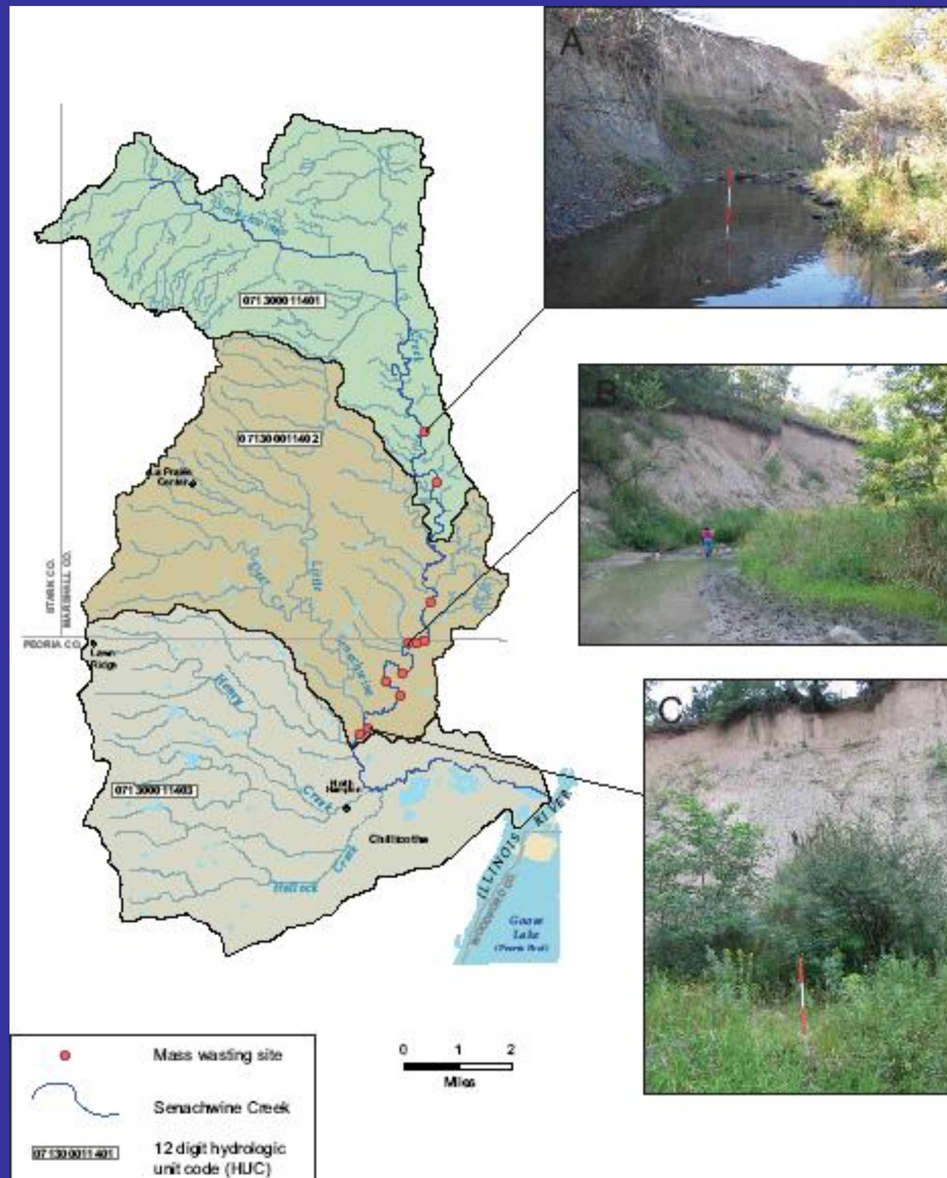


Senachwine Creek
Channel Bed Materials



Senachwine Creek

Examples of Mass Wasting Sites



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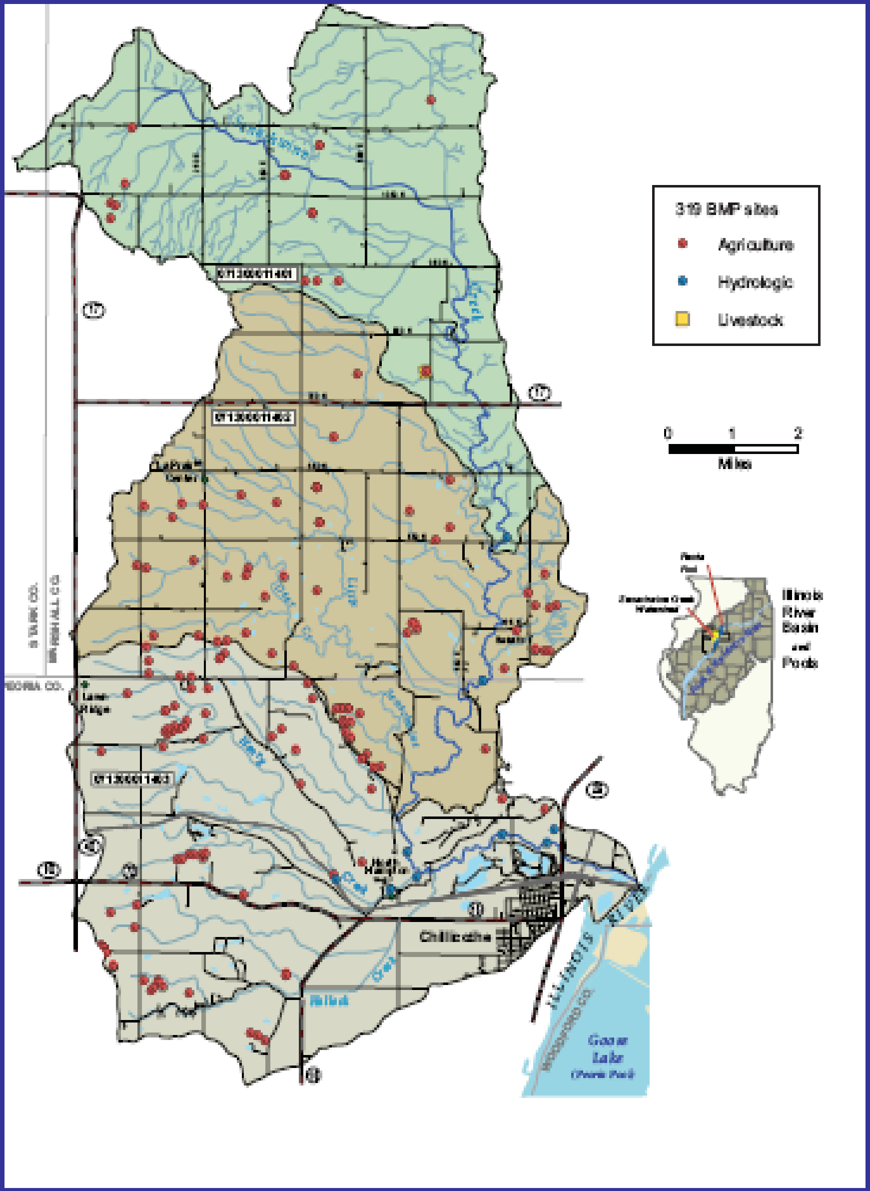
Senachwine Creek

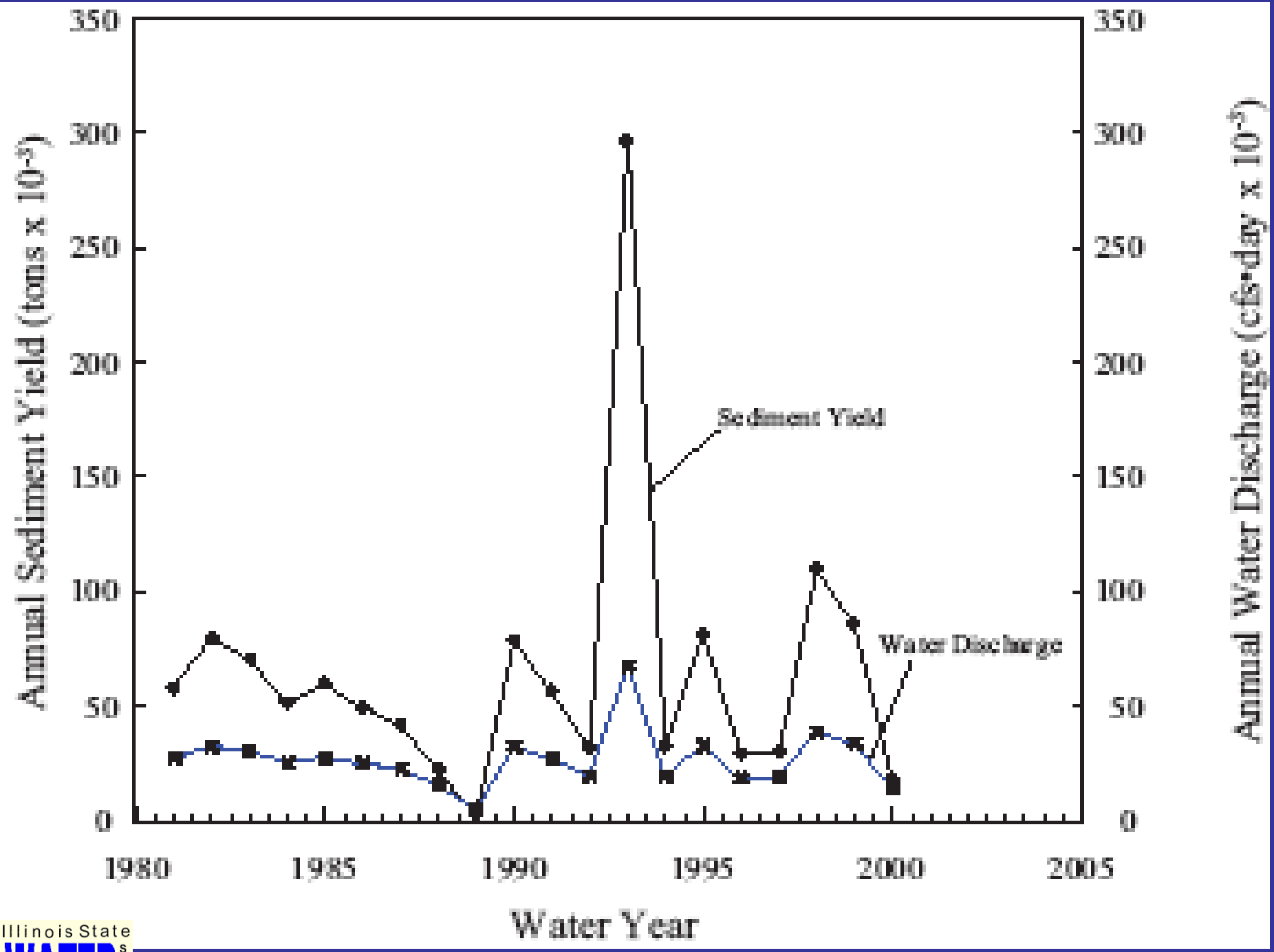
319 BMP Sites



Channel and Near Channel Sources of Sediment are Significant

Senachwine Creek

Annual Water and Sediment Yield



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St. Louis
Illinois State
WATER
SURVEY
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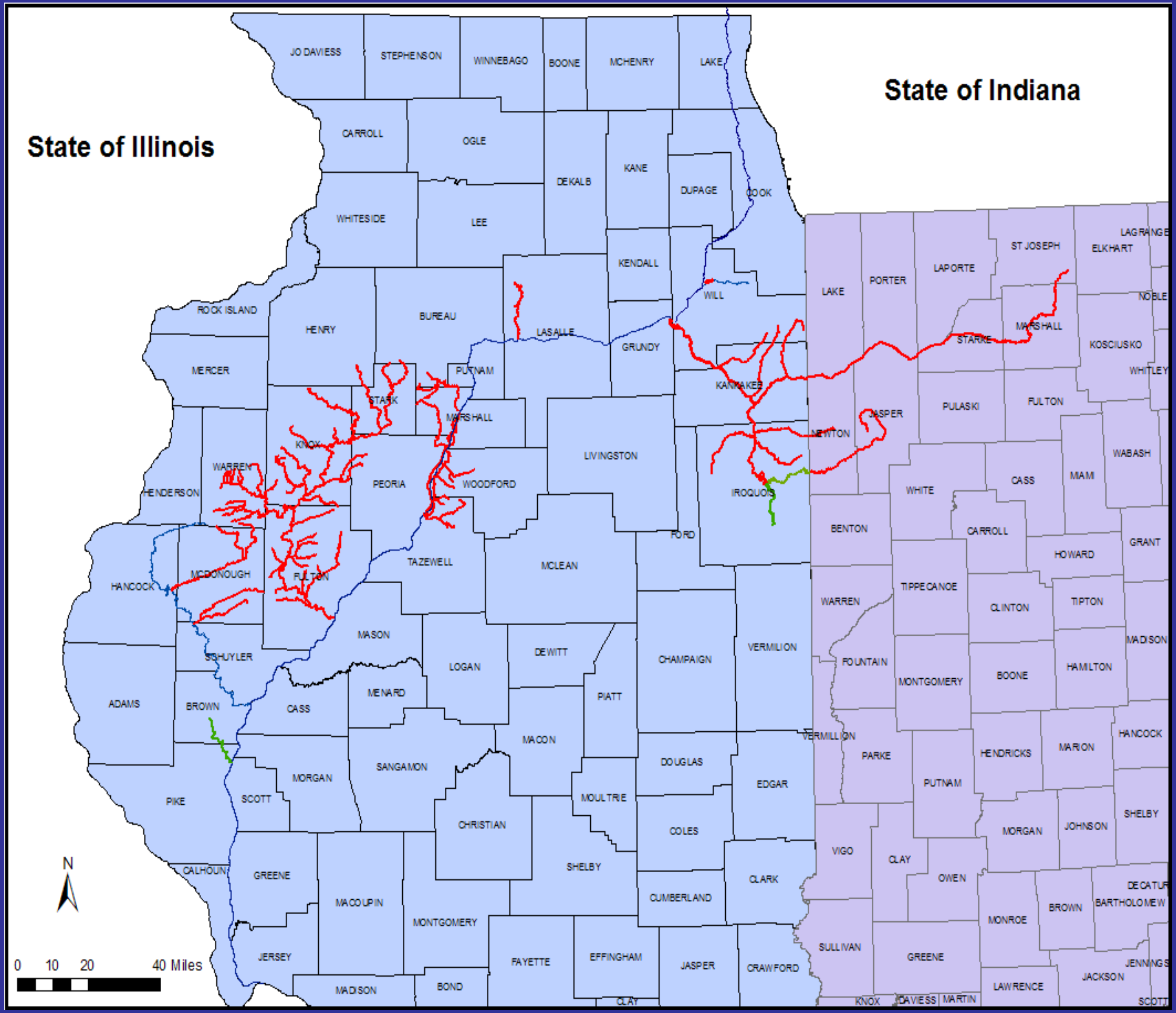
NATURAL
RESOURCES

Aerial Reconnaissance in the Illinois River Basin (spring 2004 and fall 2005)



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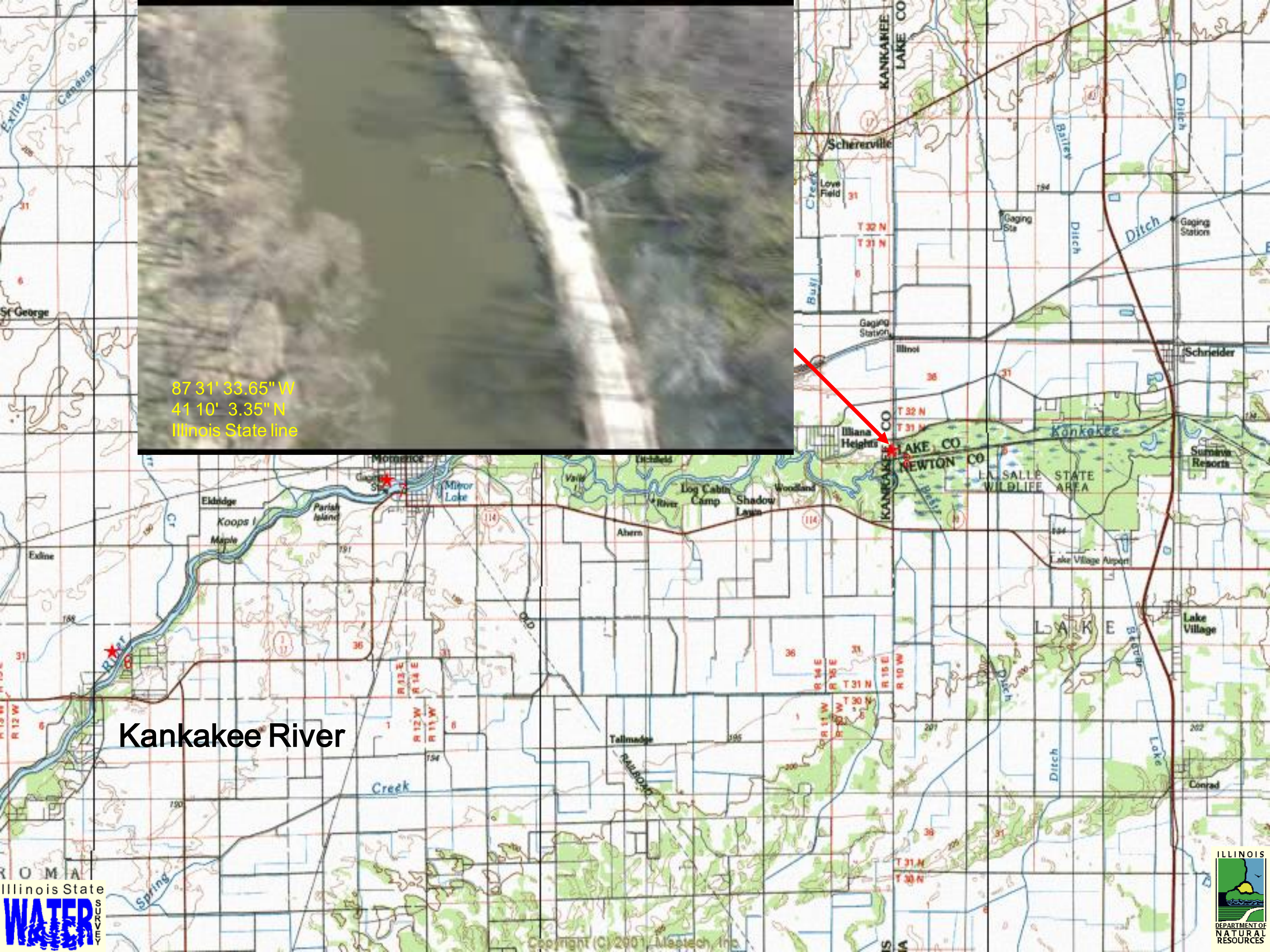
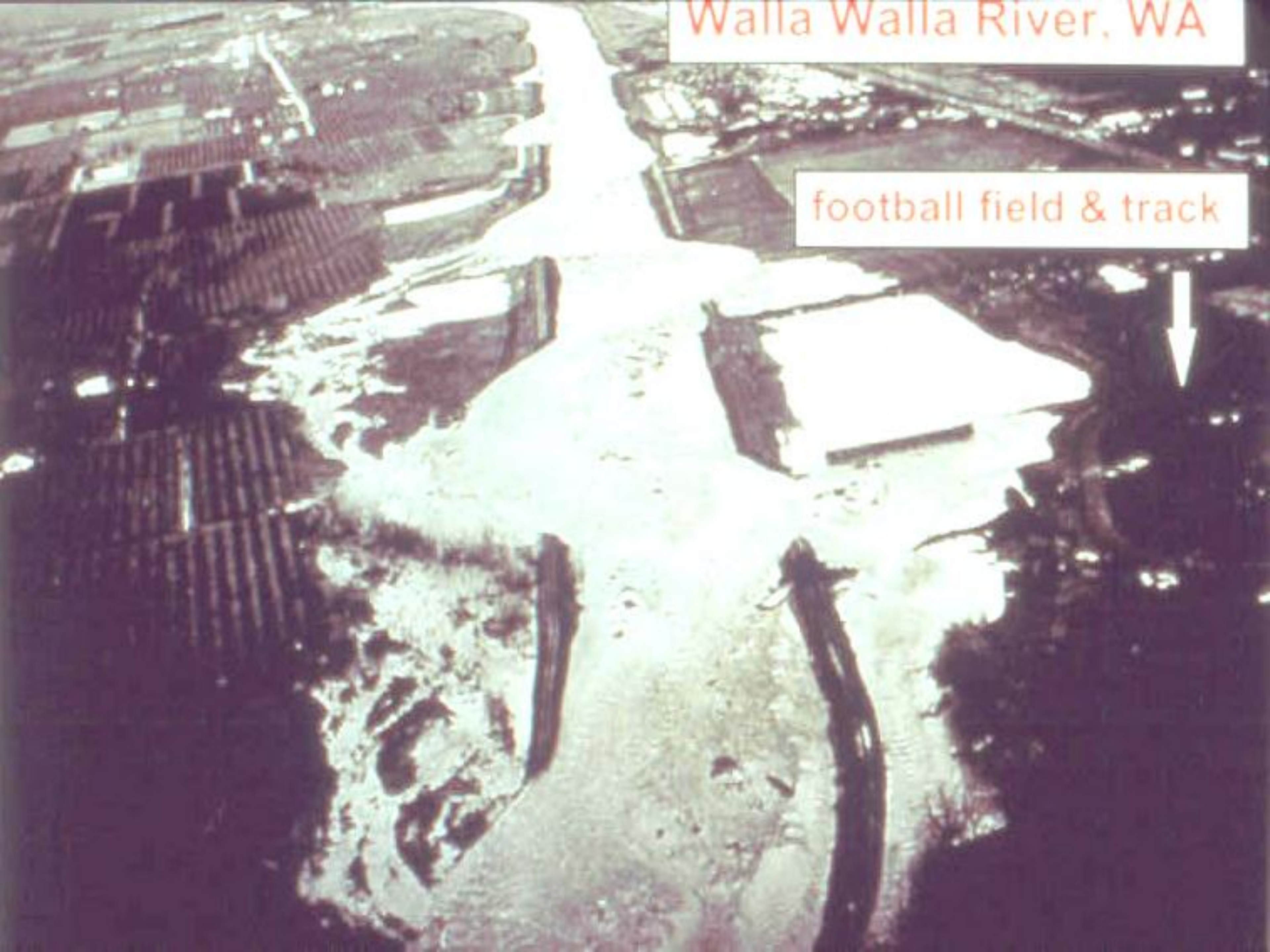
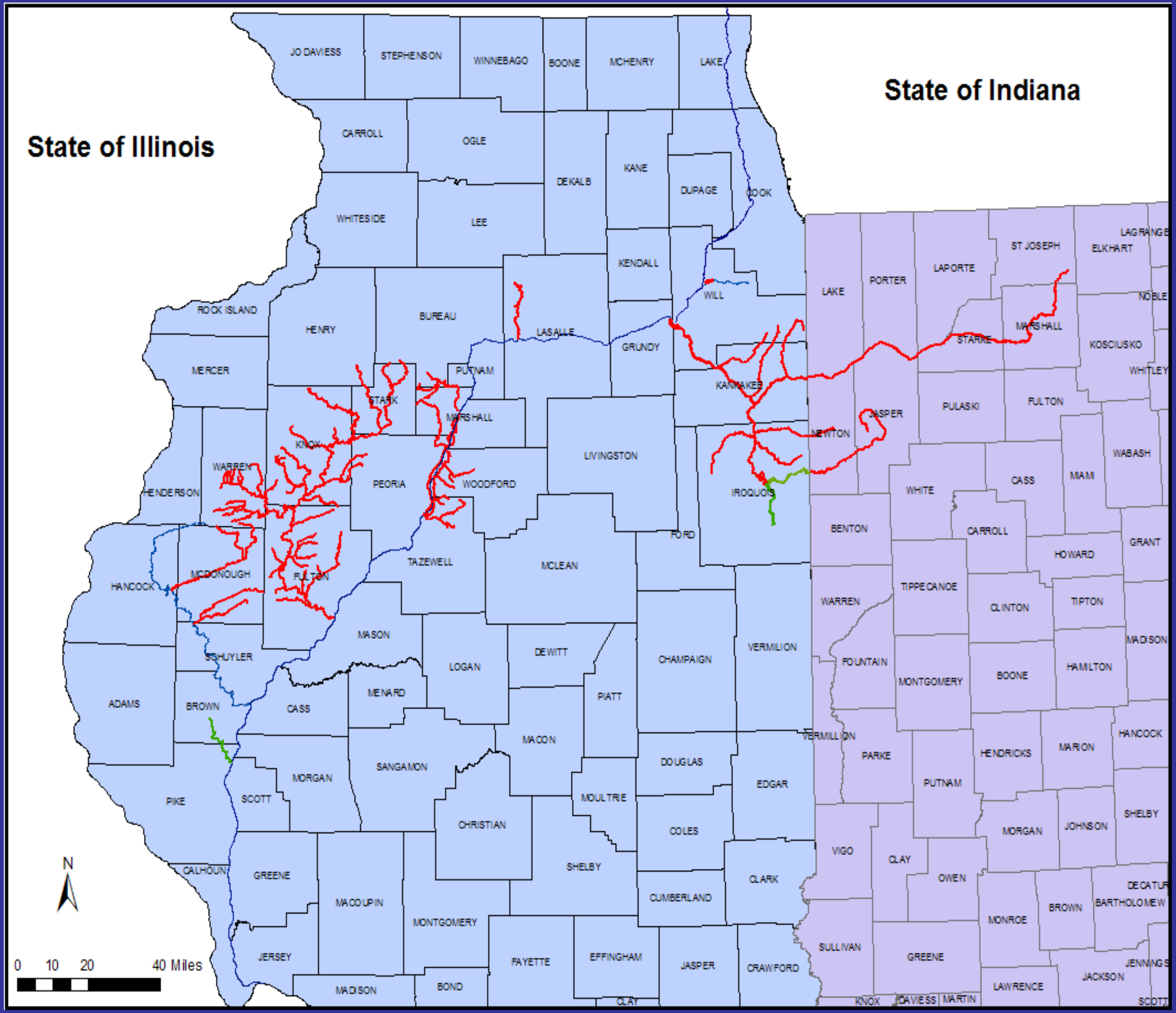
ILLINOIS DEPARTMENT OF NATURAL RESOURCES

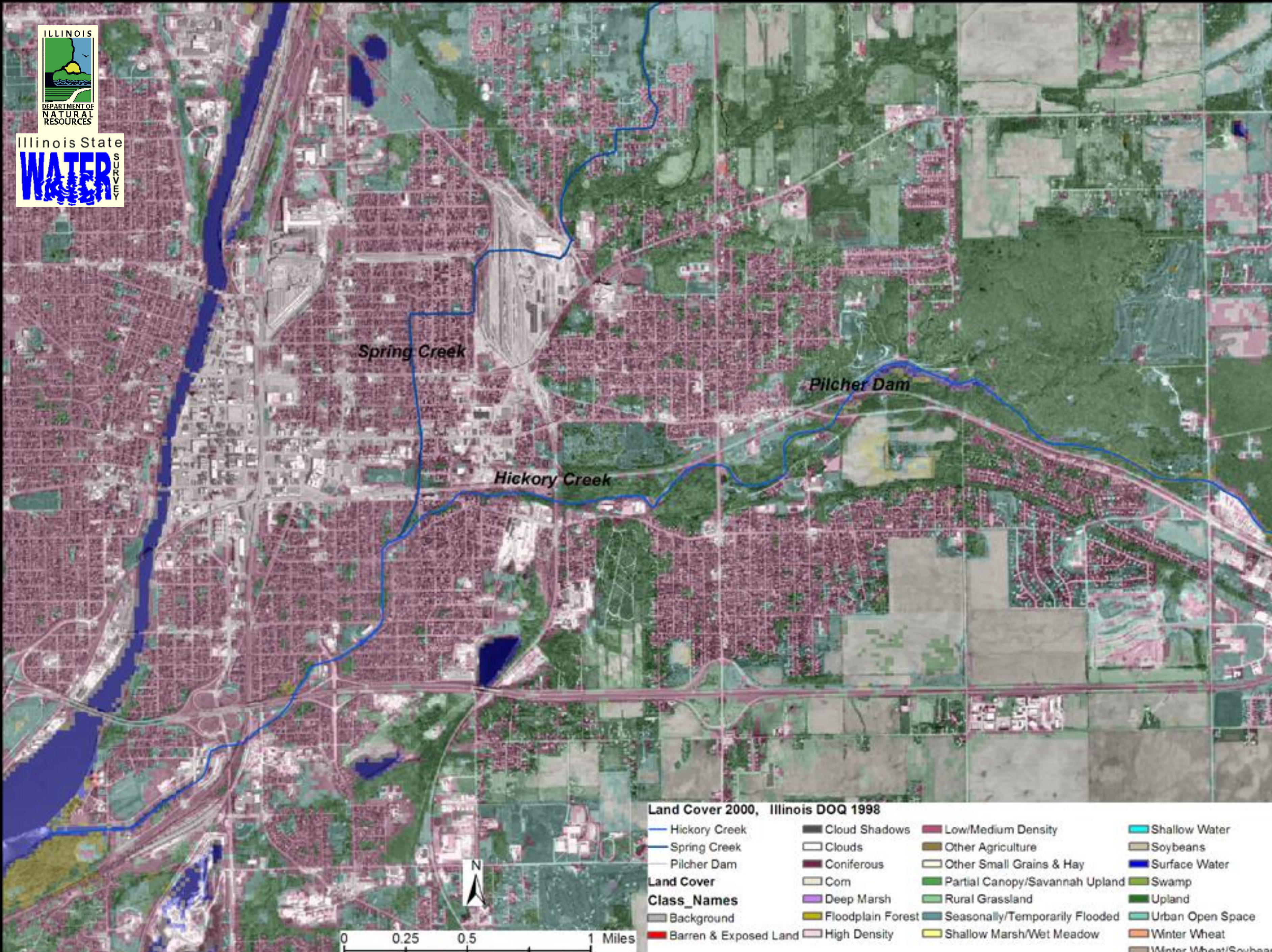

87 31' 33.65" W
41 10' 3.35" N
Illinois State line
Kankakee River
Schererville
Love Field
Gaging Station
Schneider
Illiana Heights
LAKE CO
NEWTON CO
LA SALLE STATE WILDLIFE AREA
Kankakee
Sumava Resorts
Momence
Mirror Lake
Log Cabin Camp
Shadow Lawn
Woodland
Eldridge
Koops
Maple
Exline
St George
Ahern
Lake Village Airport
Lake Village
Tallmadge
Conrad
RAILROAD
Creek
Spring
Ditch
Copyright (C) 2001, Maptech, Inc


Walla Walla River, WA
football field & track
next slide view


Walla Walla River, WA
football field & track

Aerial Reconnaissance in the Illinois River Basin (spring 2004 and fall 2005)




ILLINOIS
DEPARTMENT OF NATURAL RESOURCES
Illinois State WATER SURVEY
Spring Creek
Pilcher Dam
Hickory Creek
Land Cover 2000, Illinois DOQ 1998
Hickory Creek
Spring Creek
Pilcher Dam
Land Cover
Class_Names
Background
Barren & Exposed Land
Cloud Shadows
Clouds
Coniferous
Corn
Deep Marsh
Floodplain Forest
High Density
Low/Medium Density
Other Agriculture
Other Small Grains & Hay
Partial Canopy/Savannah Upland
Rural Grassland
Seasonally/Temporarily Flooded
Shallow Marsh/Wet Meadow
Shallow Water
Soybeans
Surface Water
Swamp
Upland
Urban Open Space
Winter Wheat
Winter Wheat/Soybeans
N
0 0.25 0.5 1 Miles

COPPERFIELD
Hospital
RIDGEWOOD
ELGIN
MIAMI
AVE
FOX
Highland Park
PILCHER
PARK
Marshall Sch
ALGONQUIN
KRAKAR
Park
586
596
600
Mound Cem
CEMETERY
Creek
JOLIET
Trailer Park
Culbertson Sch
INGALLS PA
St Marys Sch
OAKVIEW
4TH
Academy
Park
CORP
88 2 23.36W 41 31 30.81N
Bank erosion
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Senachwine Creek Watershed

Channel Planform Change Between 1939 and 1998

Illinois State WATER SURVEY

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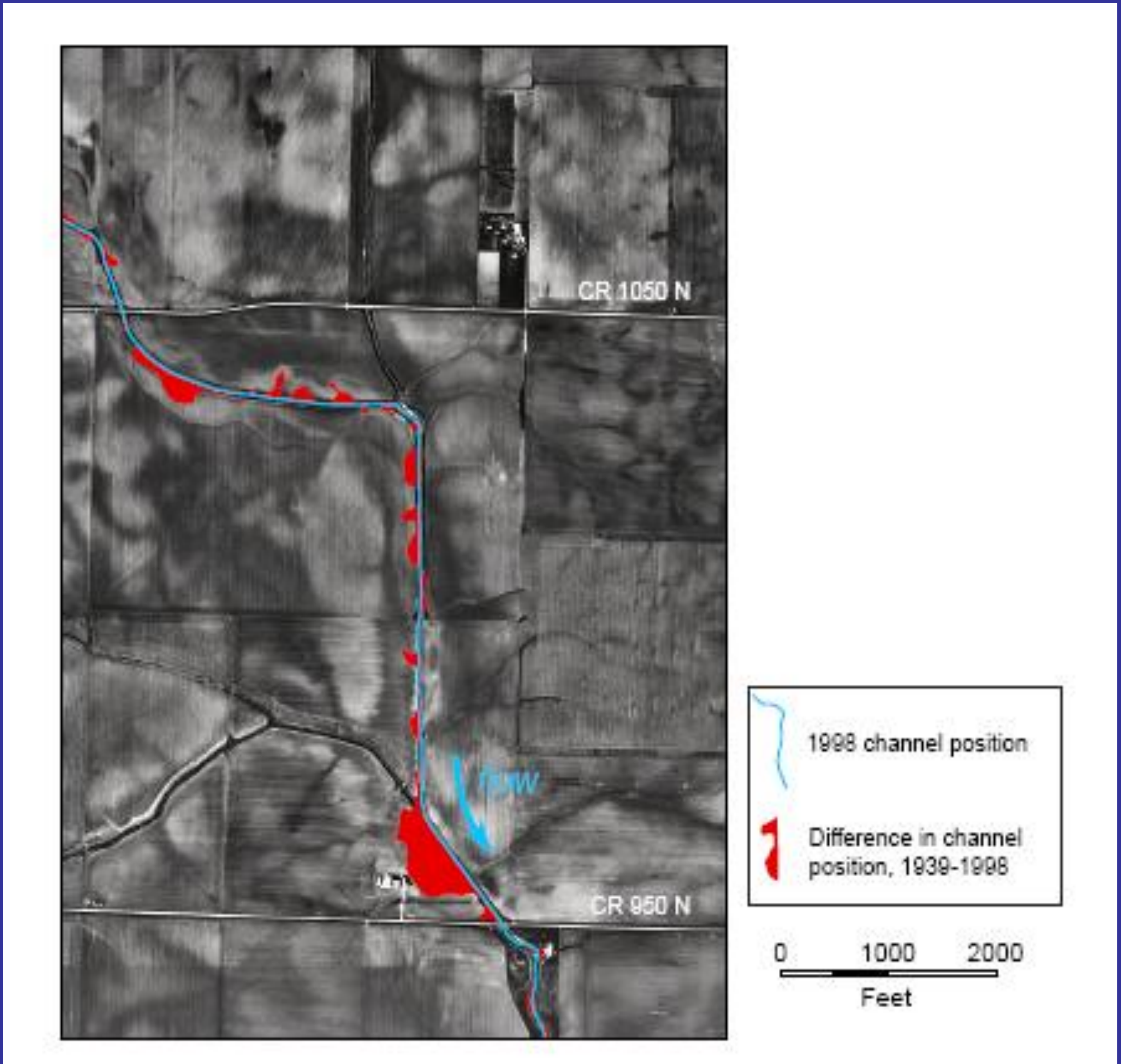
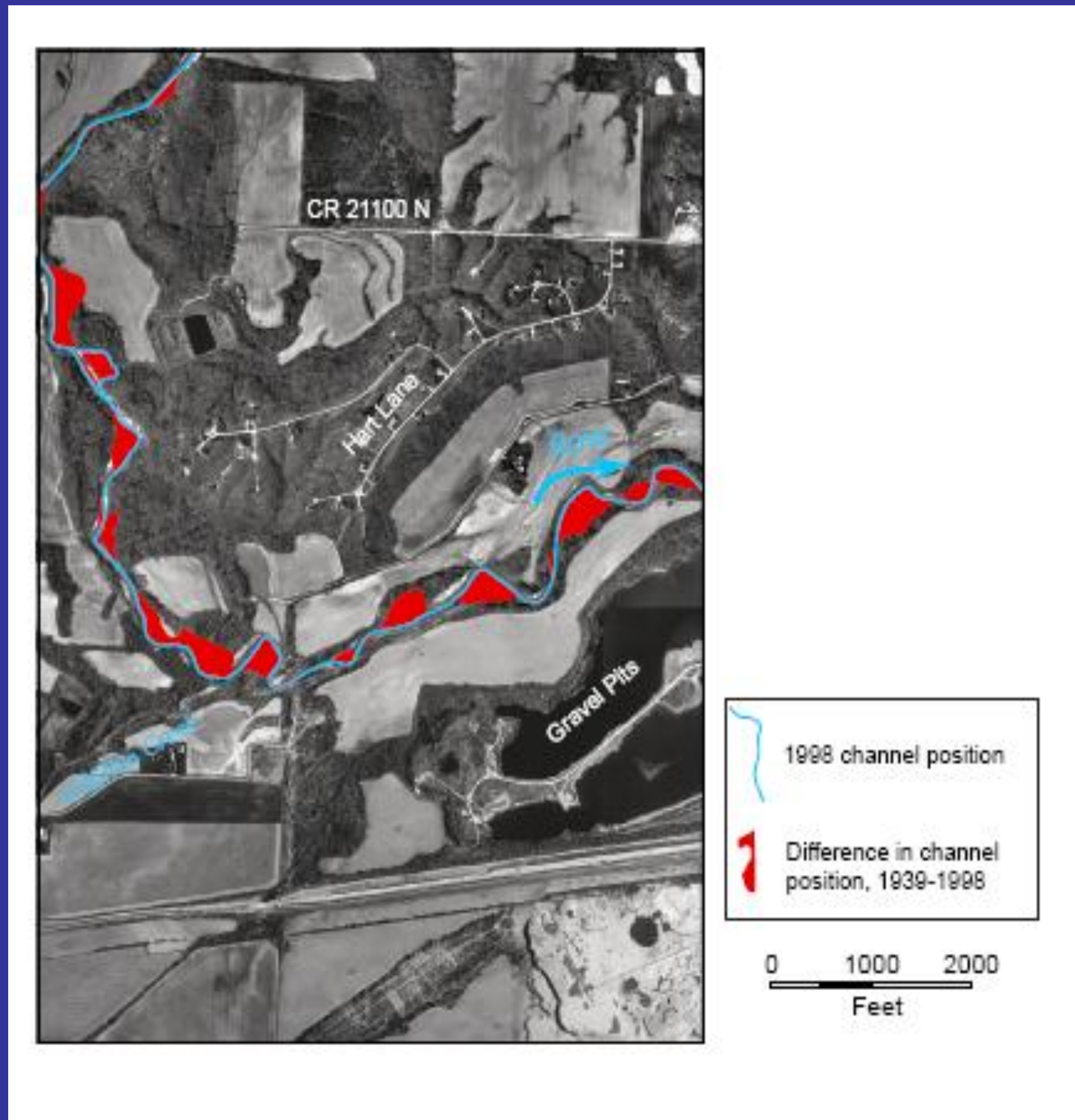
Senachwine Creek Mainstem

Upper Channelized Segment

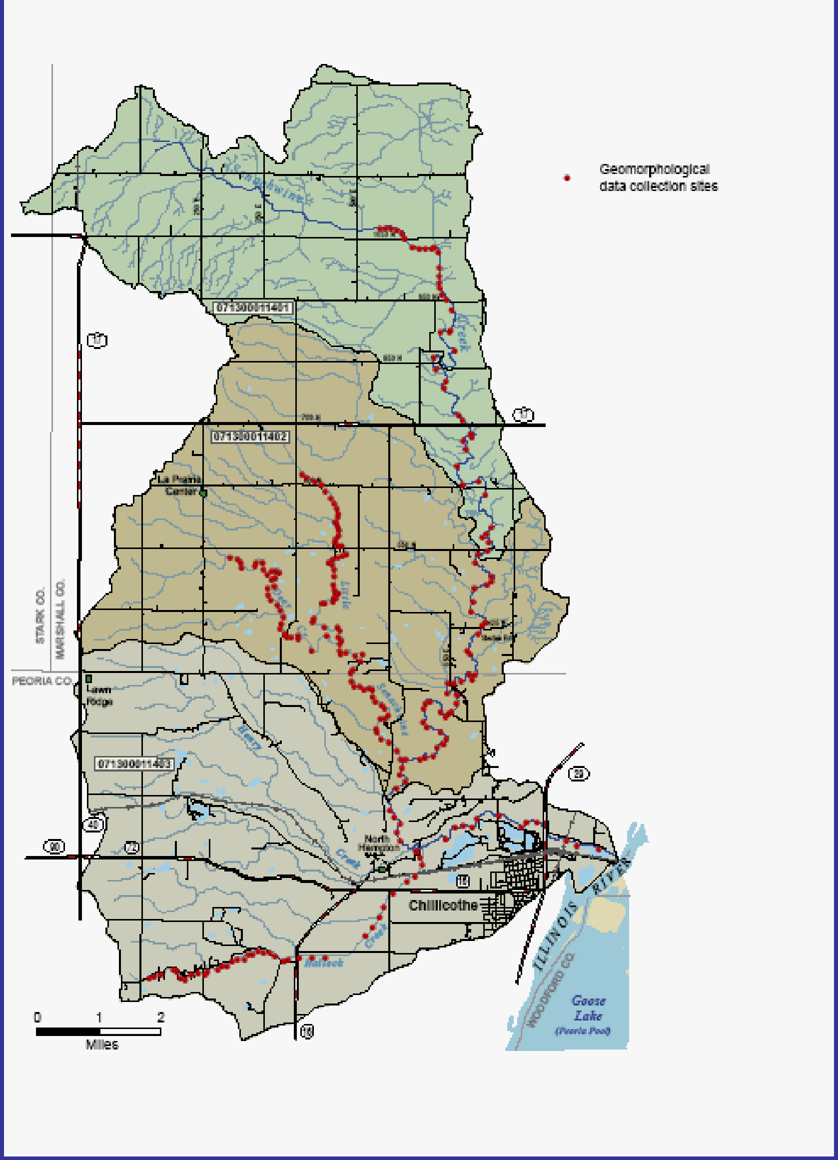


Senachwine Creek

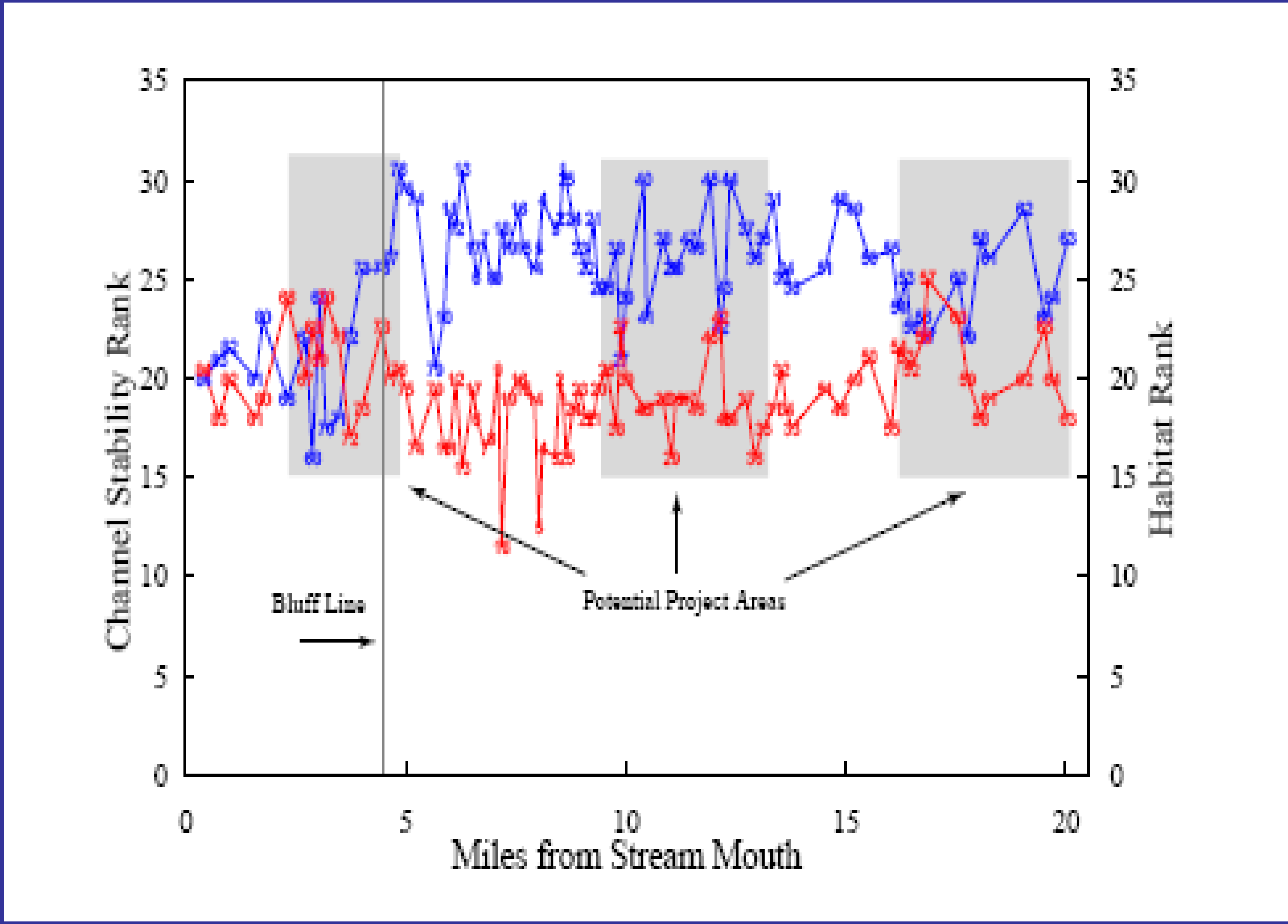
Mainstem Channel Planform Changes
Lower Hydrological Unit



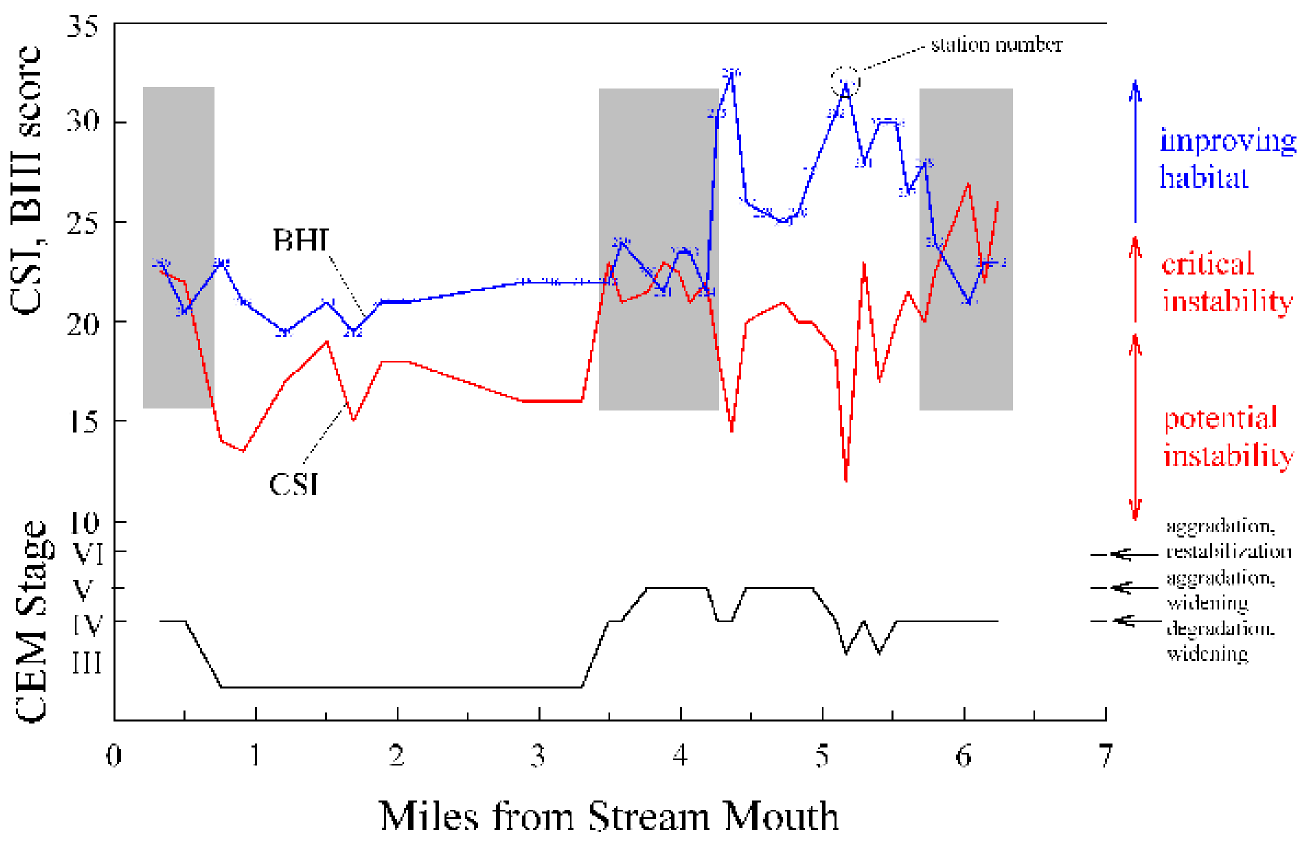
In-Stream Channel Stability and Habitat Data Collection Sites



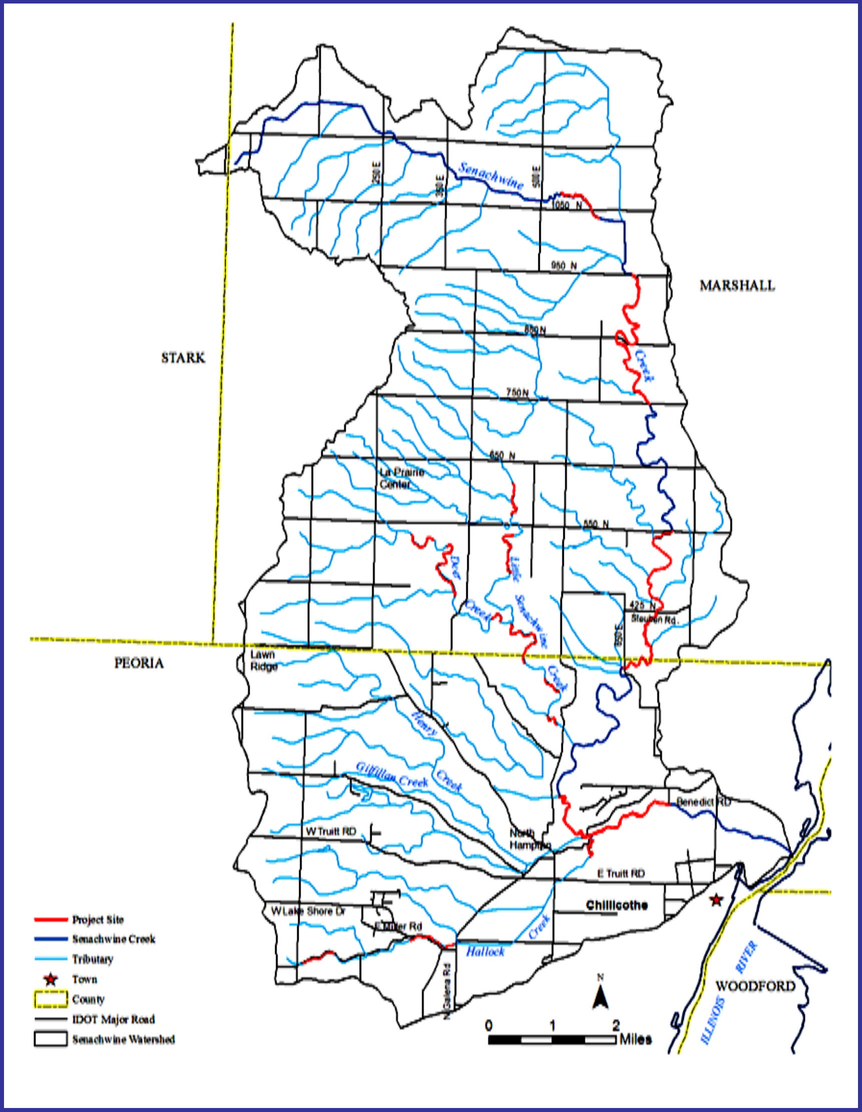
Senachwine Creek Mainstem
Channel Stability and Habitat Ranks



Hallock Creek Tributary
Channel Stability and Habitat Rankings



Senachwine Creek
Stream Channel Project Sites



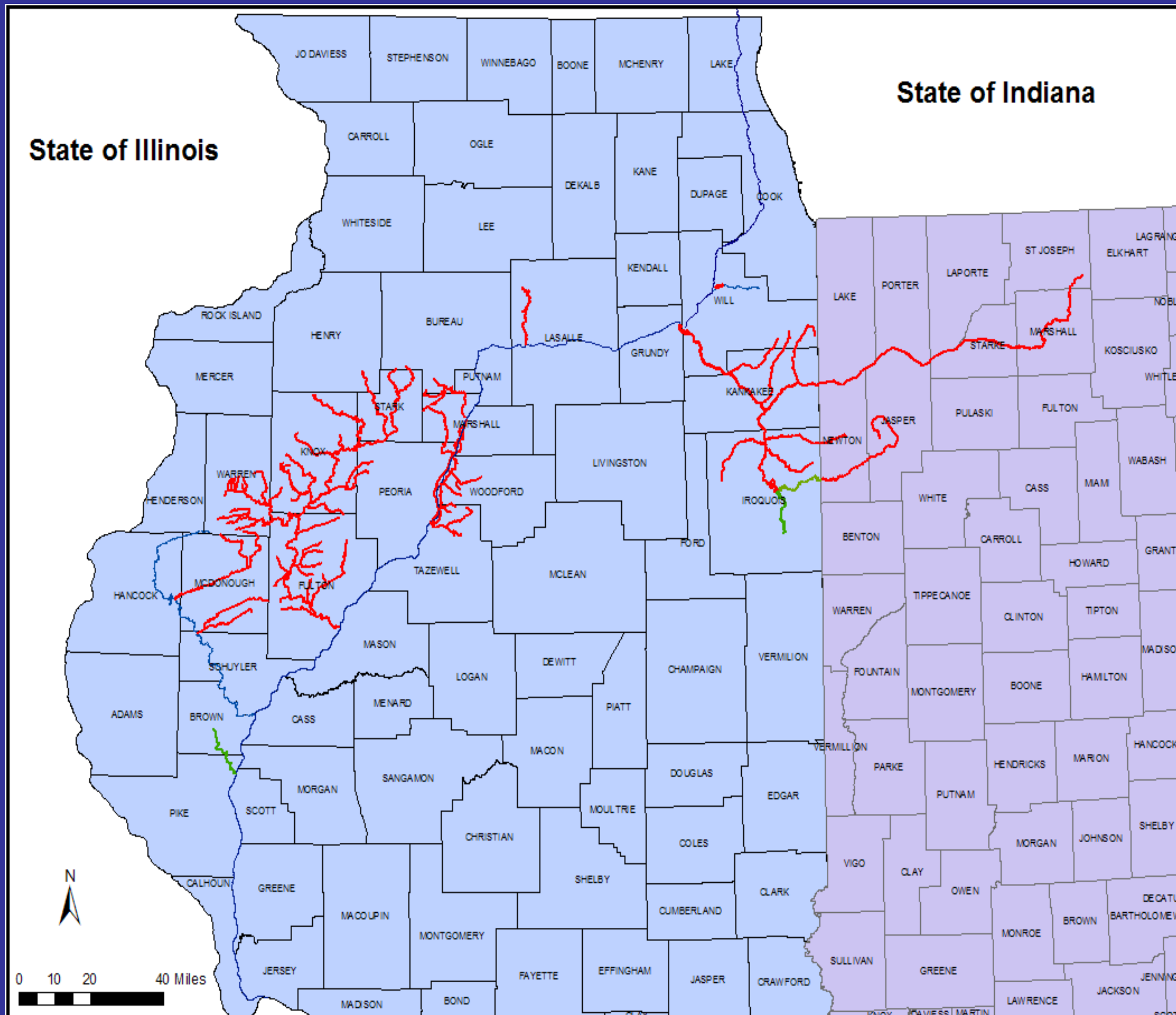
Channel and Near Channel Sources of Sediment are Significant


BANK ONE
CommerceBank
CATERPILLAR

Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Aerial Reconnaissance in the Illinois River Basin (spring 2004 and fall 2005)

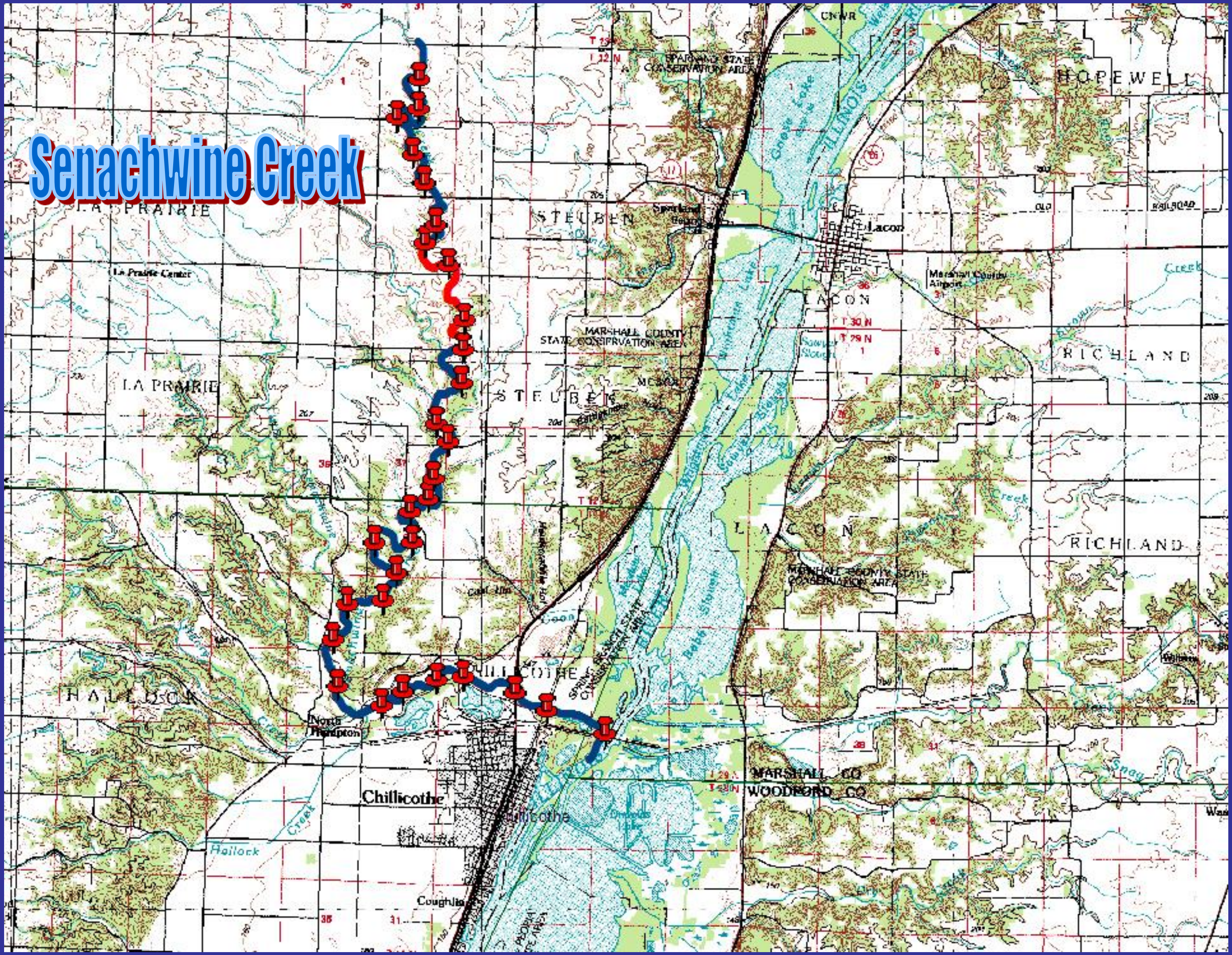


Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Senachwine Creek

Points of Interest from Aerial Reconnaissance



Senachwine Creek

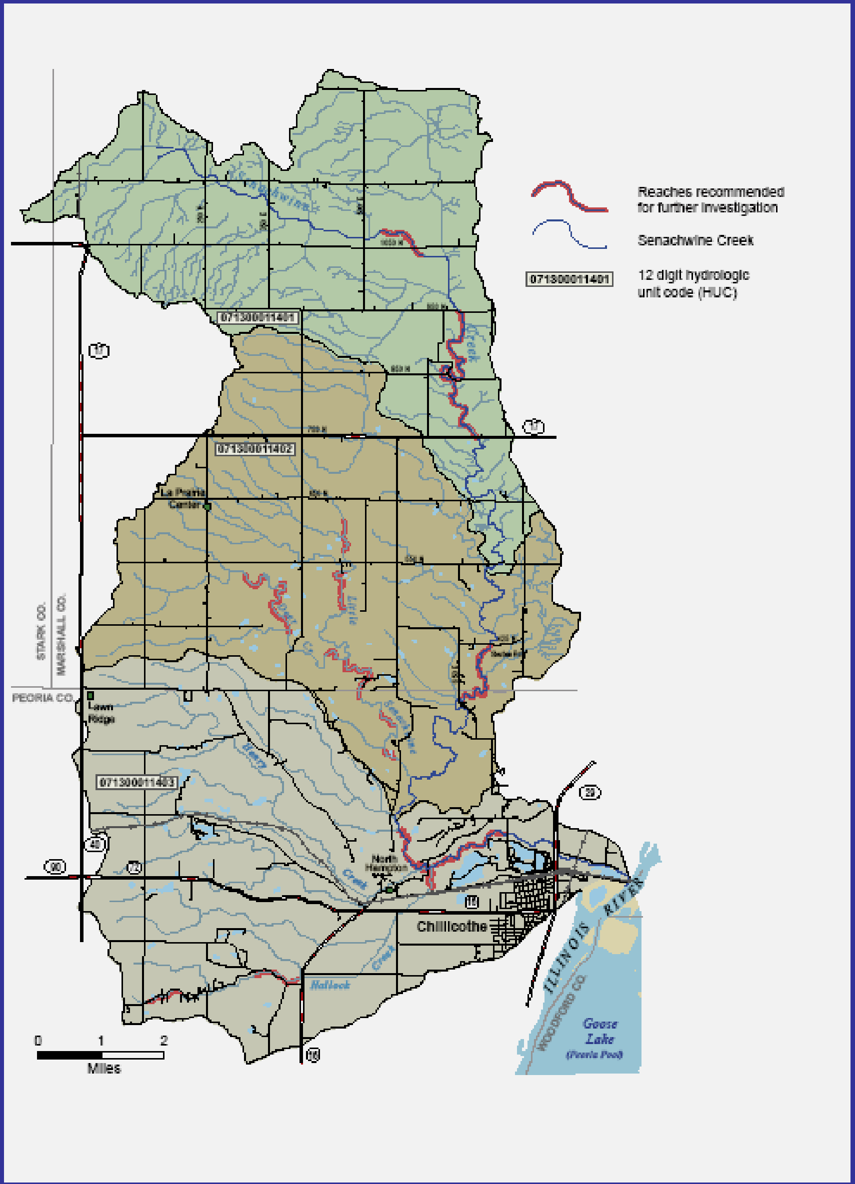
Date 3-30-04

Points	Longitude	Latitude	Description
1	89 27' 49.00" W	40 55' 48.59" N	Silt Deposit
2	89 28' 42.52" W	40 56' 3.43" N	Riffle, Sediment Bar, Tree Debris
3	89 29' 11.85" W	40 56' 15.17" N	Stream Bar
4	89 29' 58.97" W	40 56' 24.91" N	Riffle, Log Debris
5	89 30' 22.92" W	40 56' 22.48" N	Riffle, Mass Wasting, Log Debris, Bank Erosion
6	89 30' 53.45" W	40 56' 13.74" N	Riffle, Bank Erosion
7	89 31' 12.31" W	40 56' 3.43" N	Riffle, Bank Erosion, Cut Off, Knick Point
8	89 31' 52.60" W	40 56' 16.13" N	Bank Erosion, Log Debris, Riffle
9	89 31' 57.95" W	40 56' 47.75" N	Knick point, Riffle, Mass Wasting, Bank Erosion
10	89 31' 45.87" W	40 57' 12.52" N	Bank Erosion, Riffle, Knick Point
11	89 31' 13.76" W	40 57' 15.82" N	Bank Erosion, Riffle, Knick Point
12	89 31' 2.15" W	40 57' 34.81" N	Riffle, Bank Erosion, Cut Off
13	89 31' 22.84" W	40 57' 55.17" N	Riffle, Bank Erosion, Mass Wasting
14	89 30' 48.52" W	40 57' 56.47" N	Riffle
15	89 30' 51.38" W	40 58' 17.22" N	Bank Erosion, Riffle
16	89 30' 35.25" W	40 58' 26.41" N	Bank Erosion, Riffle, Knick Point, Mass Wasting
17	89 30' 30.98" W	40 58' 40.57" N	Bank Erosion, Riffle, Log Jam, Beaver Dam
18	89 30' 18.90" W	40 59' 5.85" N	Sediment Bar, Bank Erosion, Riffle
19	89 30' 29.68" W	40 59' 18.10" N	Beaver Dam, Bank Erosion, Riffle, Log Jam
20	89 30' 8.11" W	40 59' 46.69" N	Bank Erosion, Log Debris, Riffle
21	89 30' 7.61" W	41 0' 9.63" N	Riffle, Bank Erosion
22	89 30' 7.02" W	41 0' 29.96" N	Bank Erosion, Riffle
23	89 30' 22.84" W	41 1' 7.11" N	Bank Erosion, Riffle
24	89 30' 44.74" W	41 1' 21.76" N	Bank Erosion, Riffle
25	89 30' 35.56" W	41 1' 34.45" N	Bank Erosion, Riffle
26	89 30' 46.96" W	41 2' 2.83" N	Knick point, Bank Erosion, Riffle
27	89 30' 58.03" W	41 2' 22.38" N	Bank Erosion, Riffle
28	89 31' 13.44" W	41 2' 47.06" N	Bank Erosion, Riffle
29	89 30' 54.42" W	41 2' 53.72" N	Bank Erosion, Riffle
30	89 30' 54.48" W	41 3' 14.03" N	Knick point, Bank Erosion

Illinois State Water Survey

Illinois Department of Natural Resources

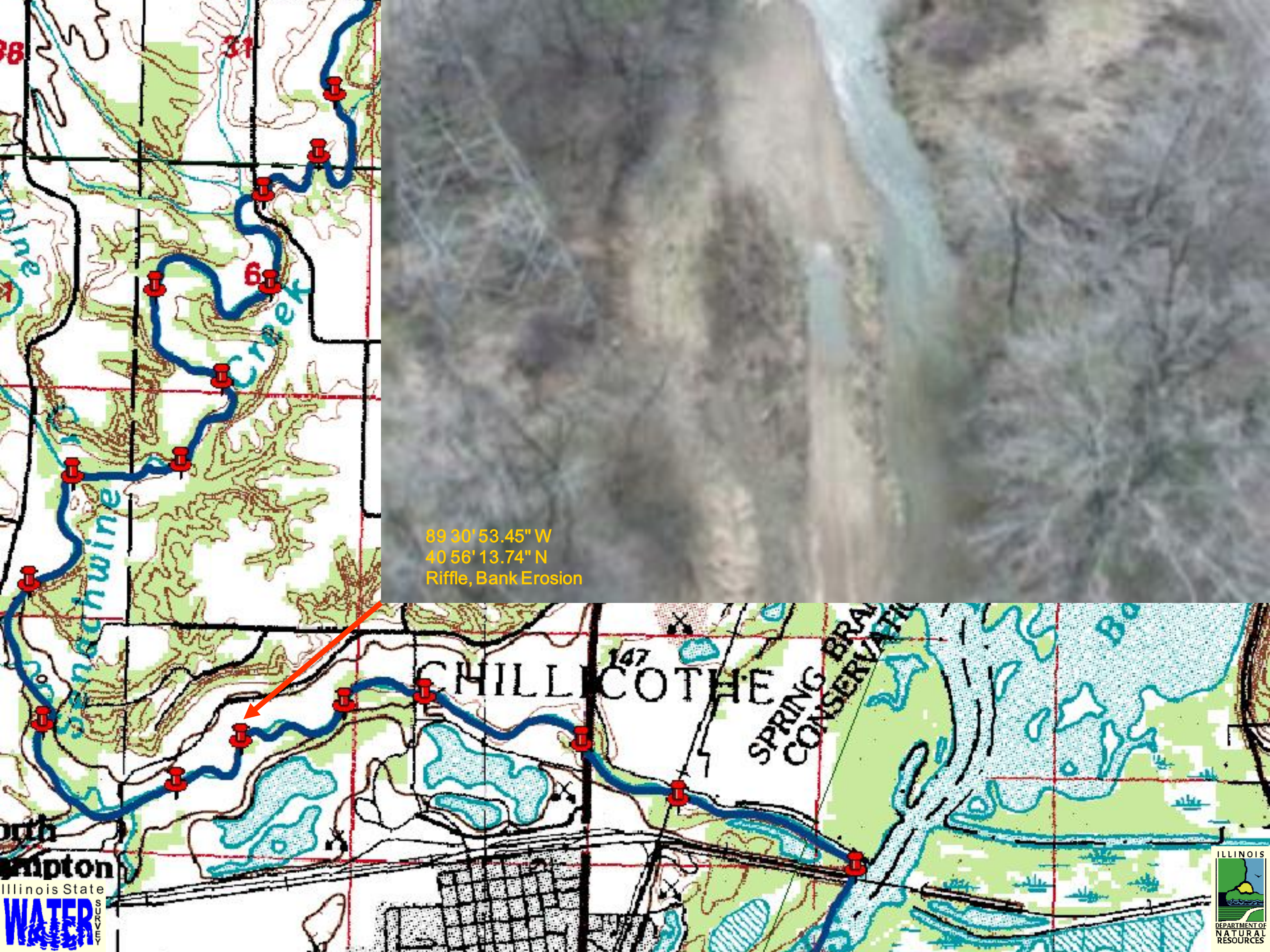
Recommended Reaches for Restoration
Based on Channel Instability and Habitat Factors



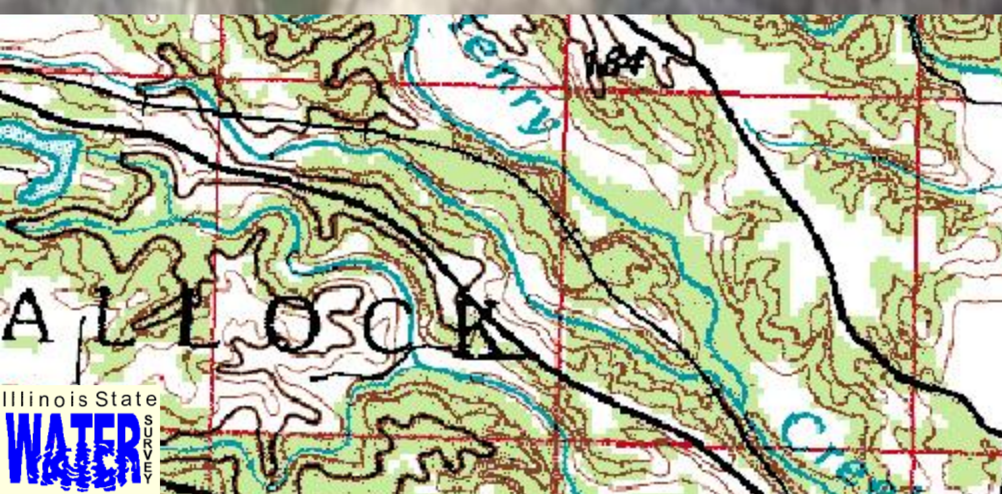
Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES


89 30' 22.92" W
40 56' 22.48" N
Riffle, Mass Wasting,
Log Debris, Bank Erosion
Creek
CHILLICOTHE
147
SPRING BRANCH
CONSERVATION
Babb
Illinois State WATER SURVEY
ILLINOIS DEPARTMENT OF NATURAL RESOURCES


89 30' 53.45" W
40 56' 13.74" N
Riffle, Bank Erosion
CHILLICOTHE
147
Creek
Illinois State
WATER
SURVEY
ILLINOIS
DEPARTMENT OF
NATURAL
RESOURCES

89 31' 12.31" W
40 56' 3.43" N
Riffle, Bank Erosion,
Cut Off, Knick Point
Creek
CHILLICOTHE
SPRING
CONSER
Illinois State
WATER
SURVEY
ILLINOIS
DEPARTMENT OF
NATURAL
RESOURCES



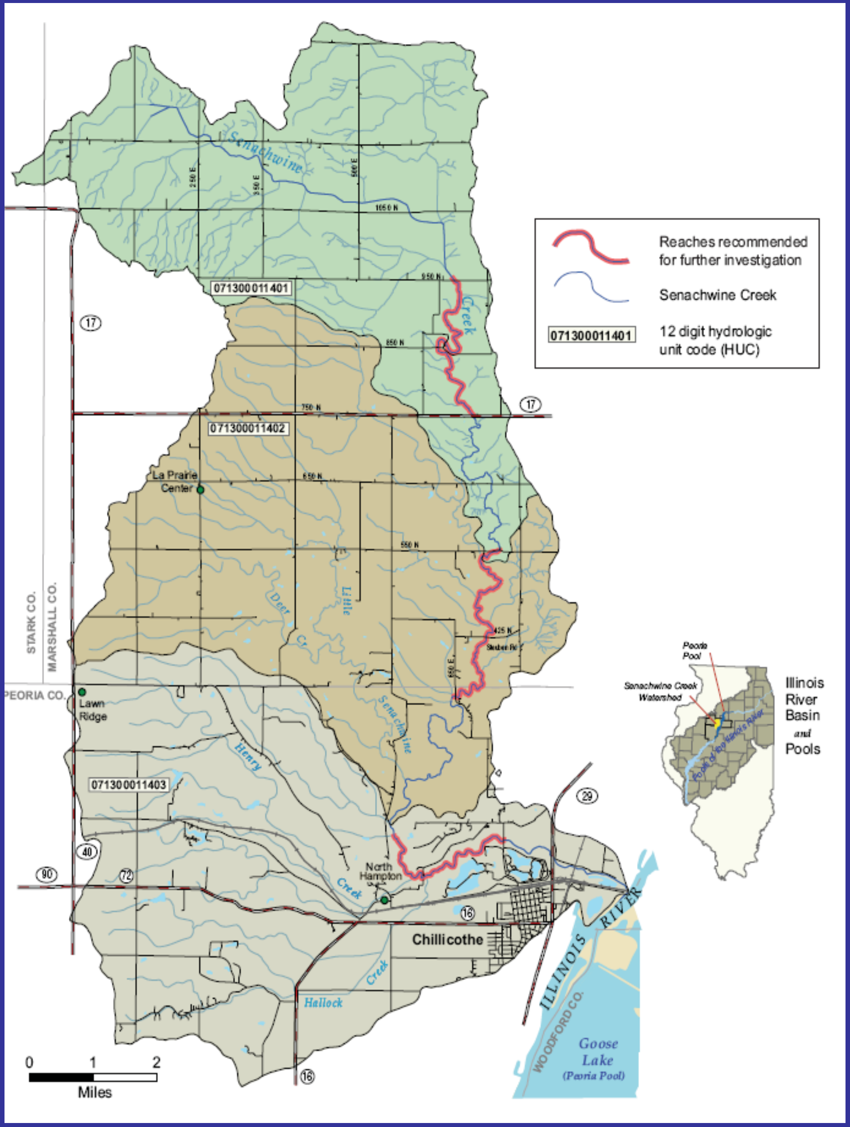
Illinois State WATER SURVEY

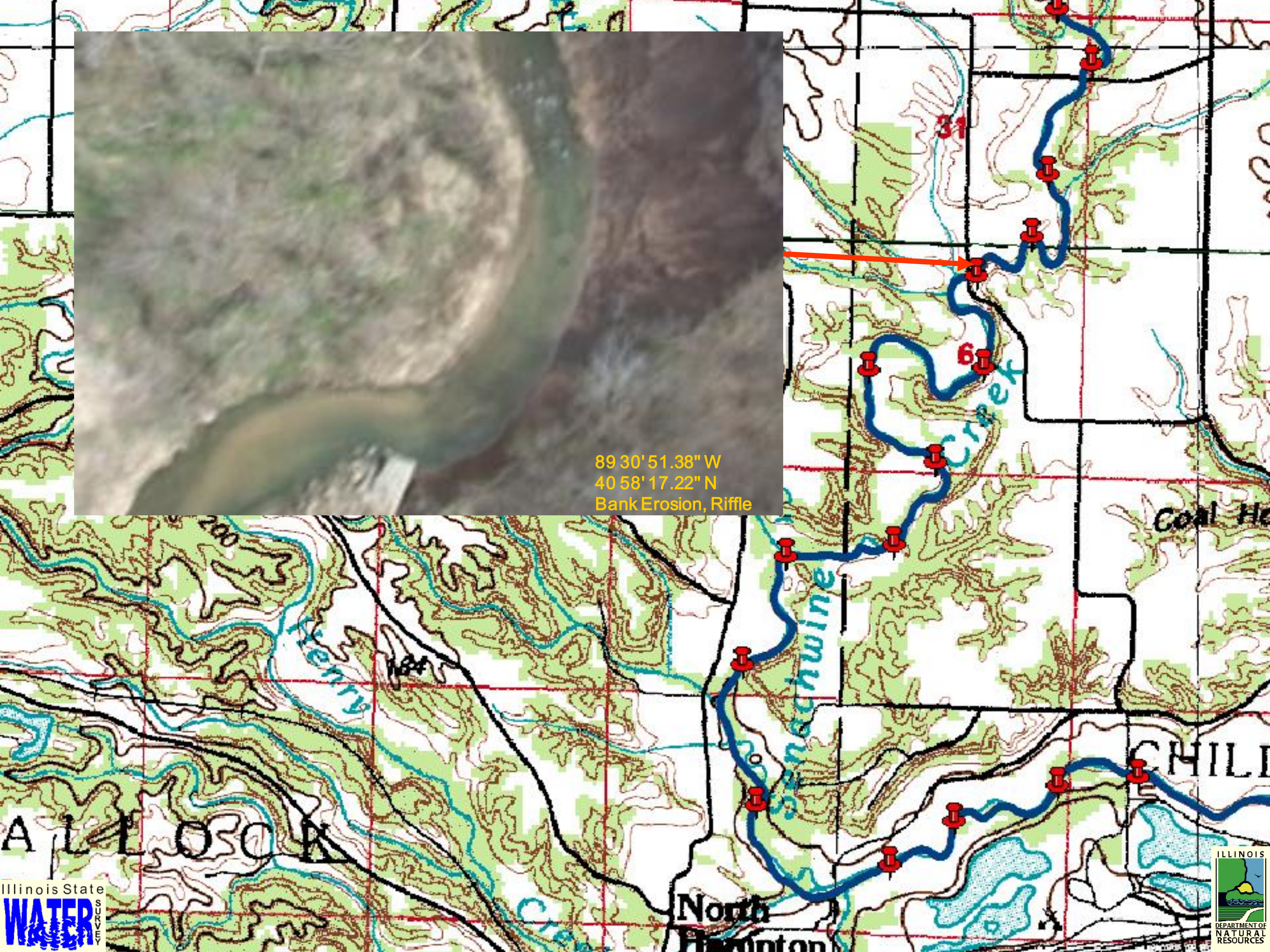
ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Senachwine Creek Mainstem

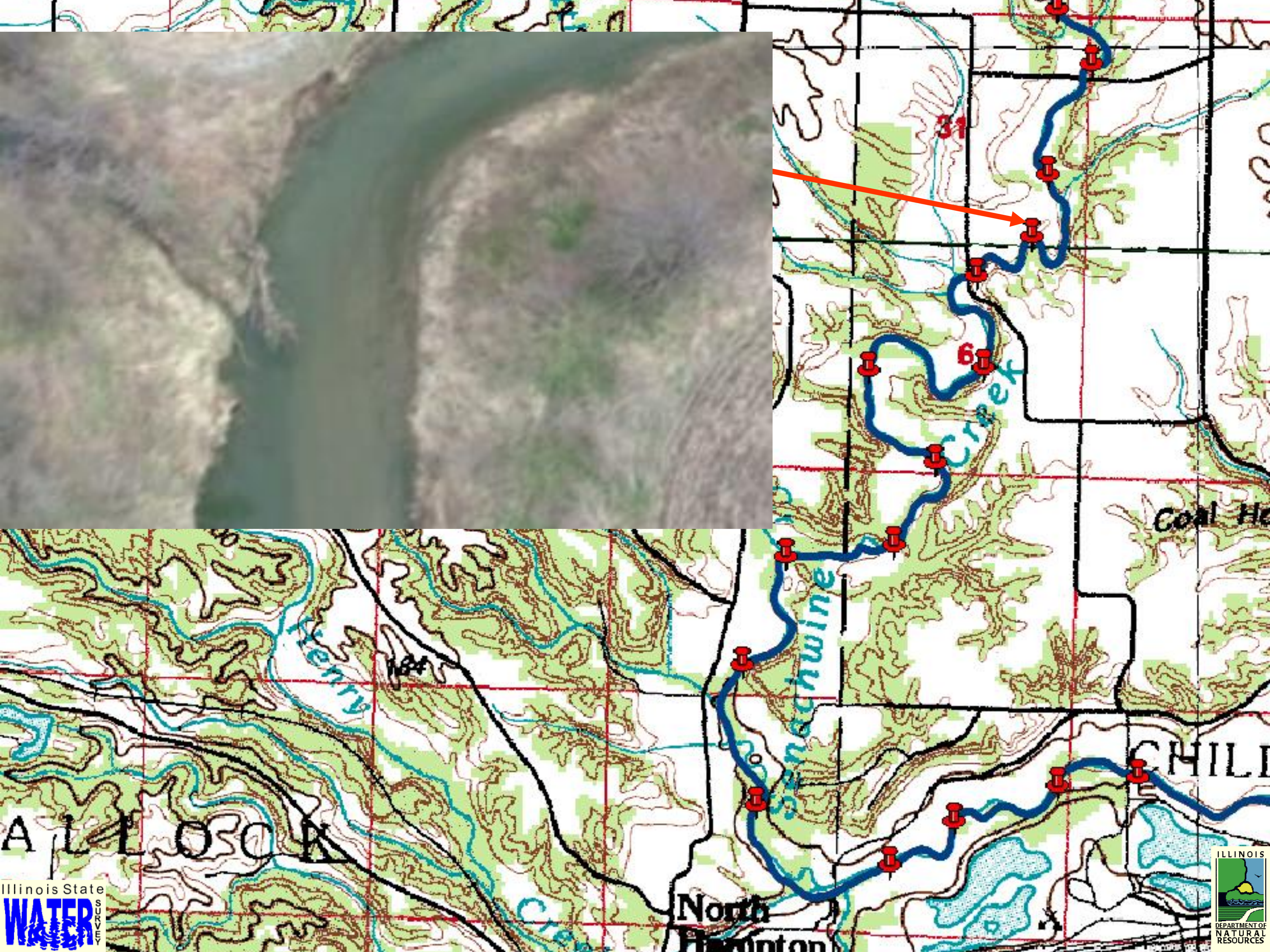
Recommended Reaches for Restoration

Based on Channel Instability Factors





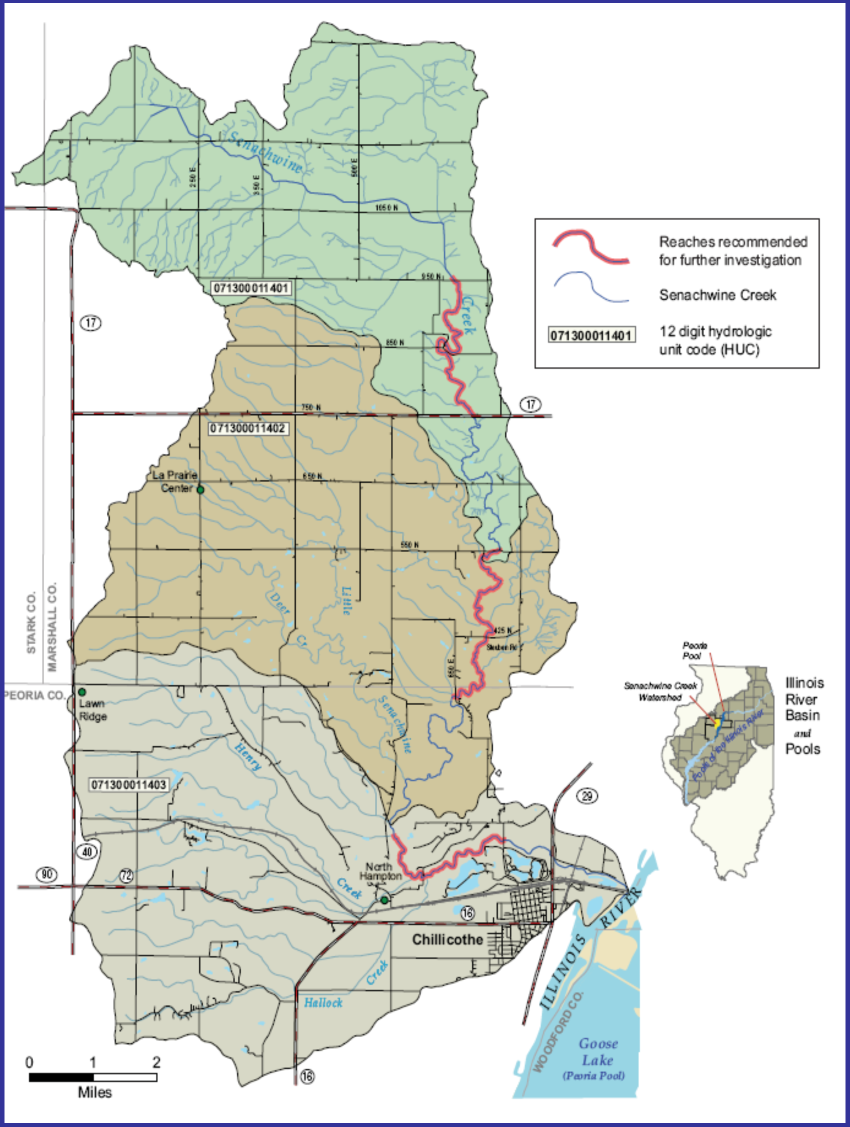
89 30' 51.38" W
40 58' 17.22" N
Bank Erosion, Riffle
31
6
Creek
Senachwine
Henry
Coal
North
200
Illinois State
WATER SURVEY
ILLINOIS
DEPARTMENT OF NATURAL RESOURCES

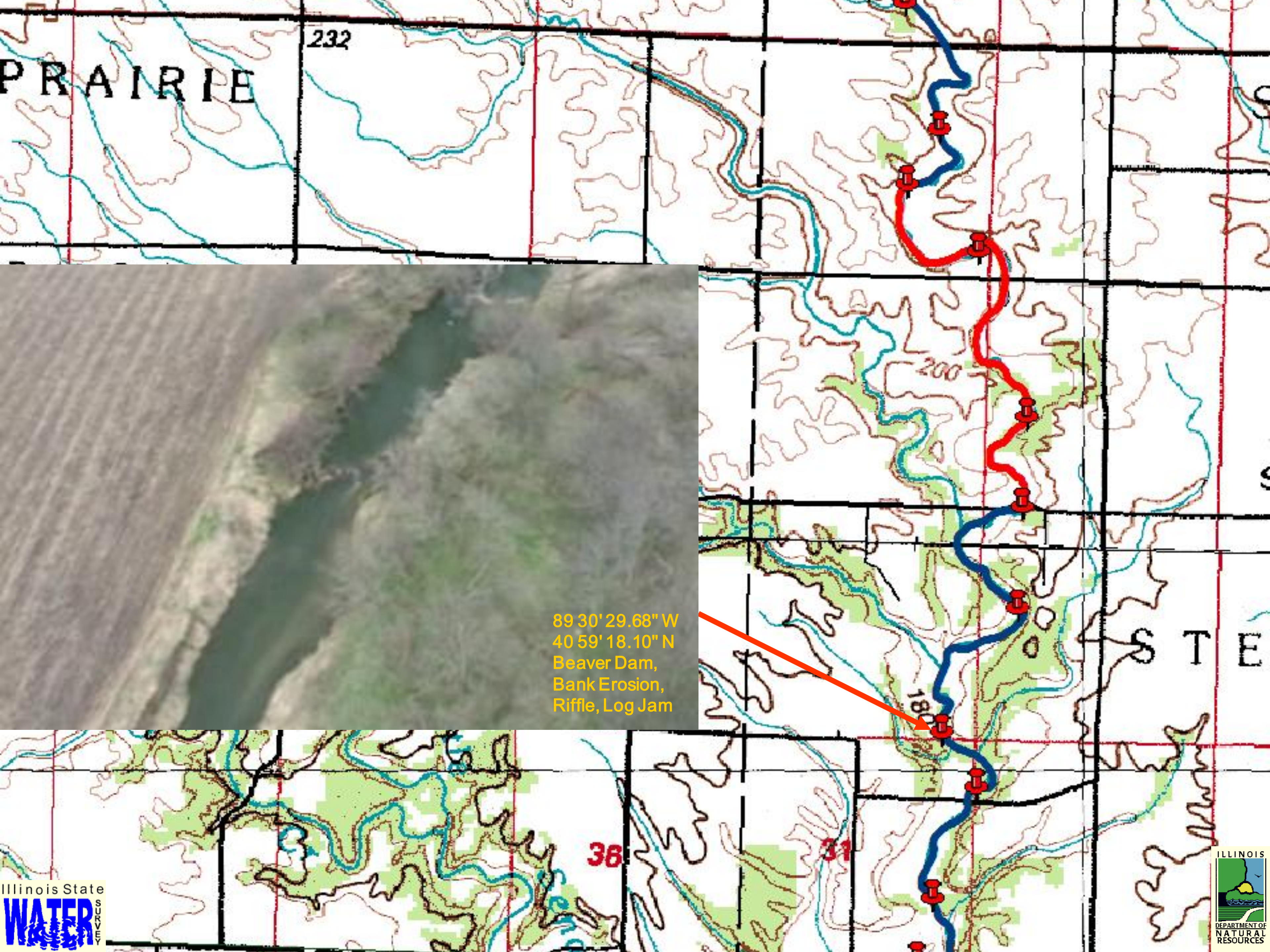

31
6
Creek
Senachwine
Coal
Henry
184
North
Illinois State
WATER SURVEY
ILLINOIS
DEPARTMENT OF NATURAL RESOURCES

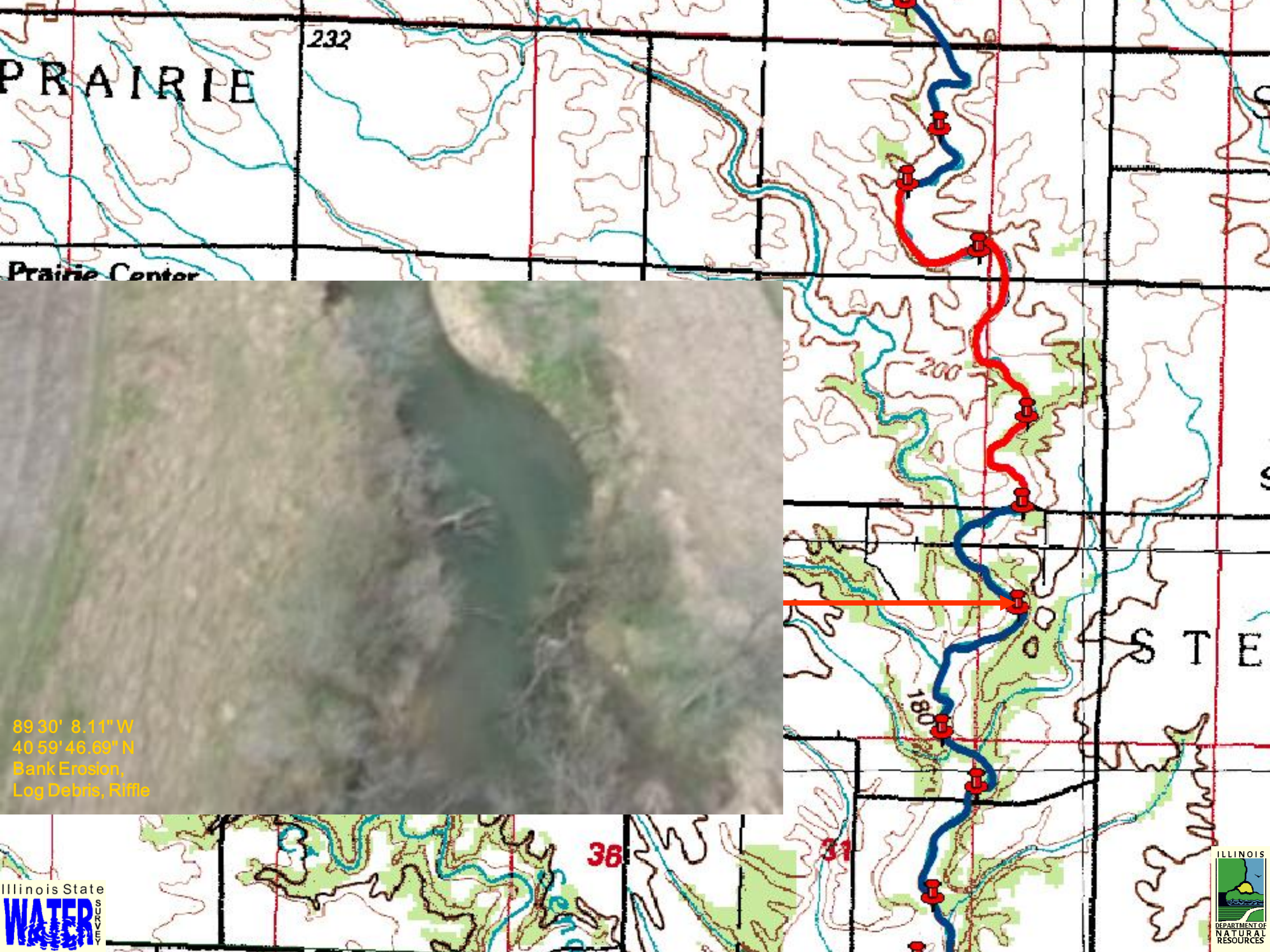
Senachwine Creek Mainstem

Recommended Reaches for Restoration

Based on Channel Instability Factors

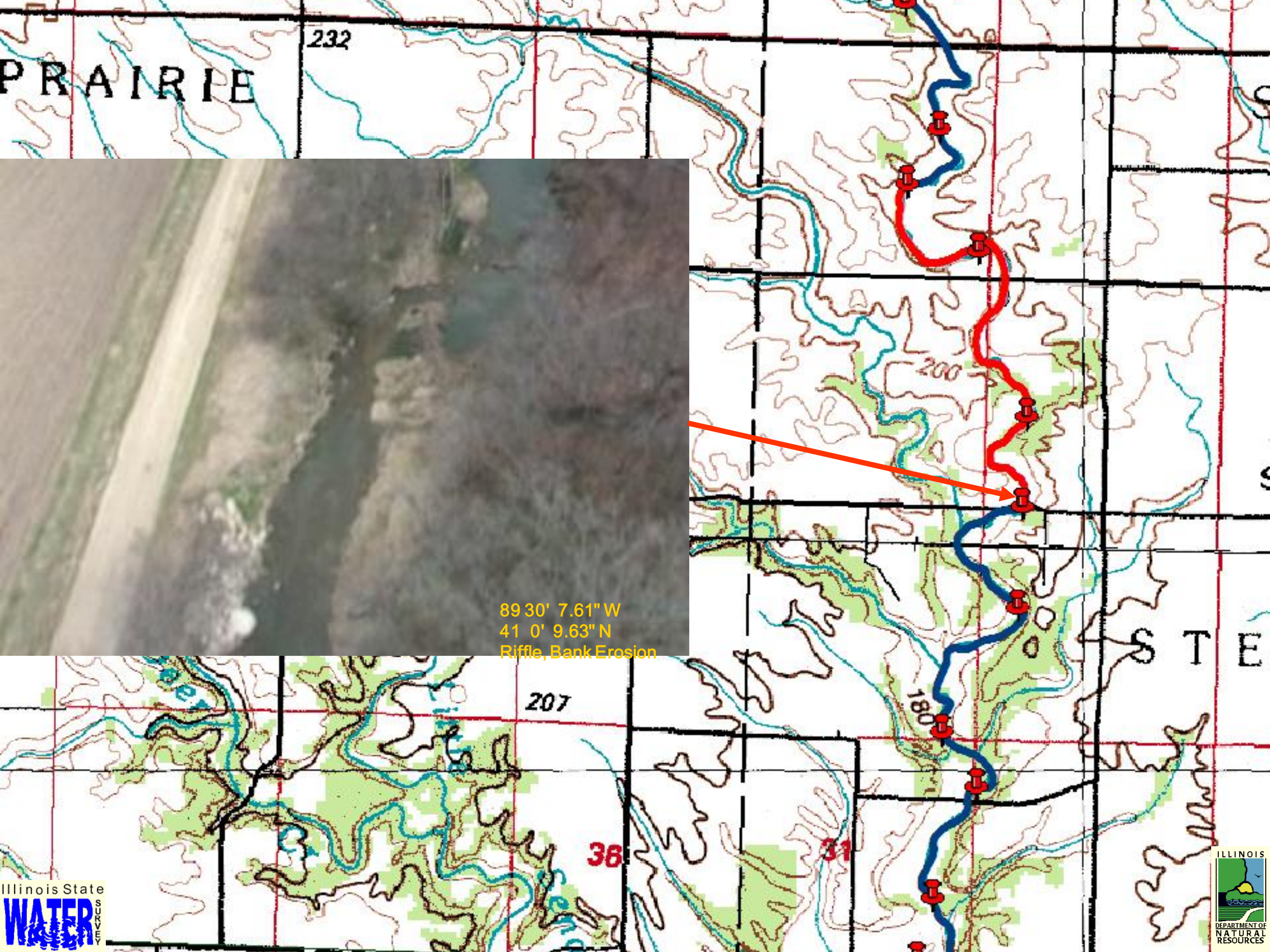



232
PRAIRIE
200
180
STE
36
31
89 30' 29.68" W
40 59' 18.10" N
Beaver Dam,
Bank Erosion,
Riffle, Log Jam
Illinois State WATER SURVEY
ILLINOIS DEPARTMENT OF NATURAL RESOURCES



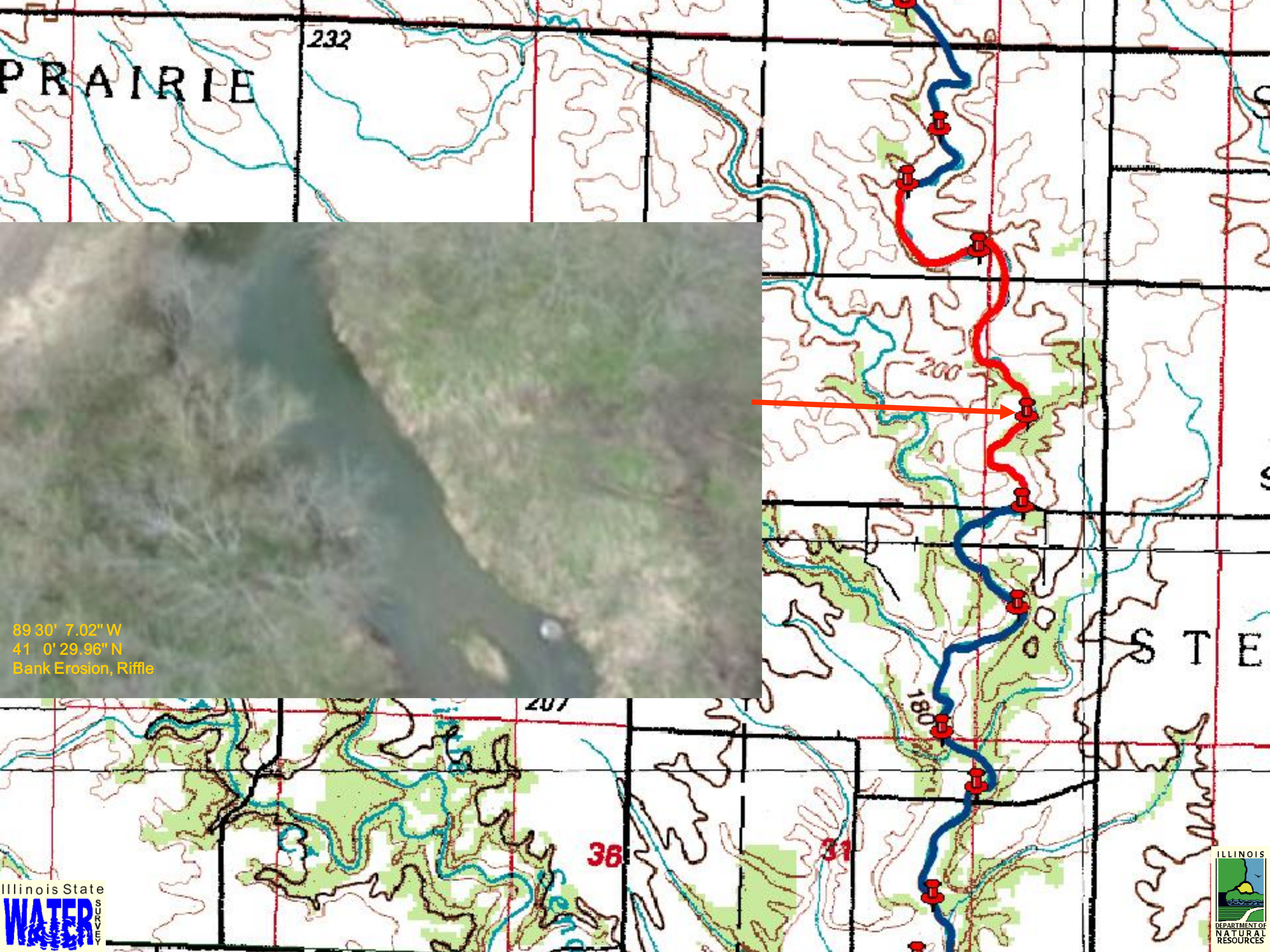
Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES



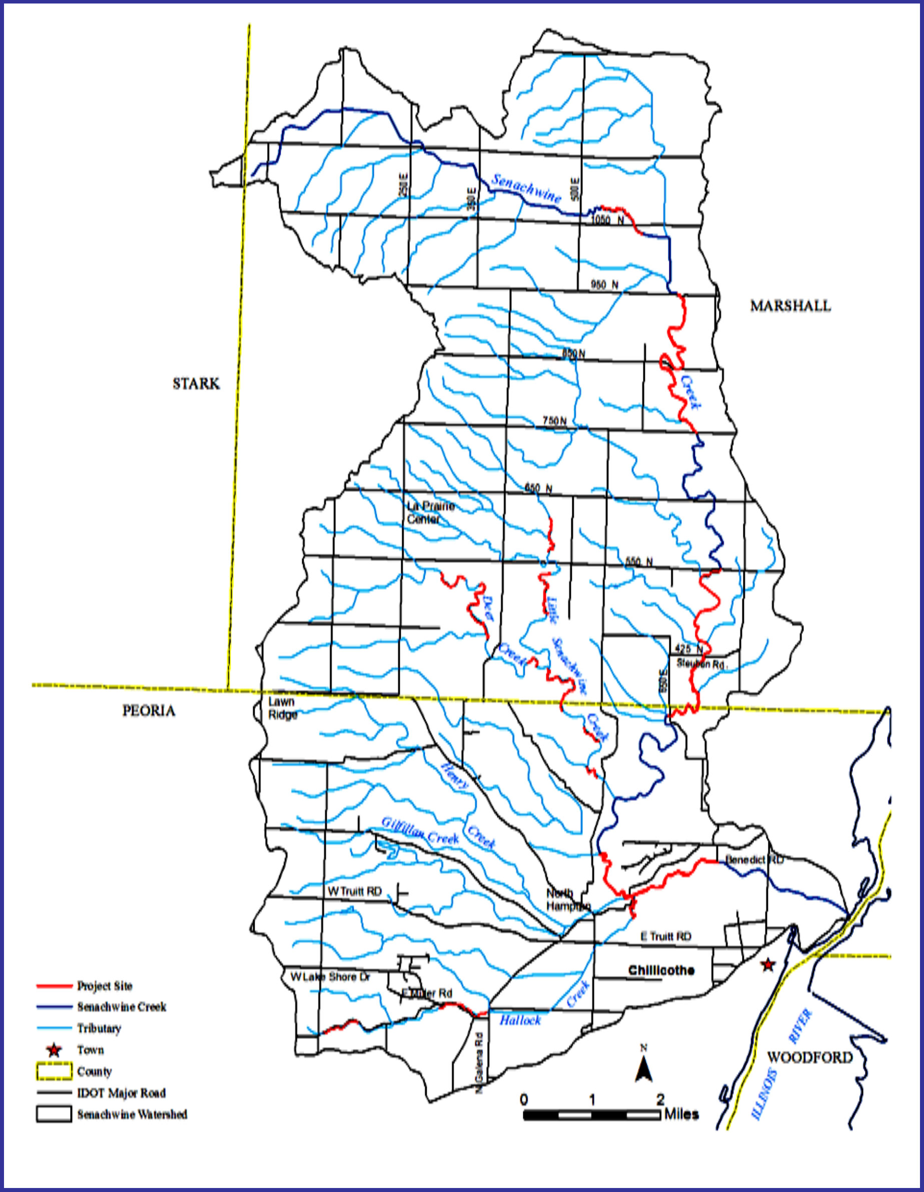
Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES



PRAIRIE
232
200
207
180
36
31
STE
89 30' 7.02" W
41 0' 29.96" N
Bank Erosion, Riffle
Illinois State
WATER
SURVEY
ILLINOIS
DEPARTMENT OF NATURAL RESOURCES

Senachwine Creek
Stream Channel Project Sites



Restoration Options

Okay, we have identified potential priority areas!

Now what do we do?

Potential Project Feature	Appropriate Agency
Traditional Upland Farm Treatment (Terraces, WASCOB's, Grassed Waterways, No-till, etc…	USDA-NRCS USDA-FSA IDOA SWCD
In-Stream Naturalization –16 Potential Segments (Riffle/Pool Structures, Lunker Structures, Bioengineering for Streambank Stabilization, etc…)	IDNR-ISWS IDNR-ORC USFWS USDA-NRCS USACOE
Priority Upland and Floodplain Wetland Restoration and Enhancement in Hydric Soil Areas	USDA-NRCS USFWS IDNR-ORC USACOE
Forested Slope and Riparian Management	USFWS USDA-NRCS IDNR-ORC IDNR-INHS
Stabilization of Select Mass Wasting Sites	USGS USACOE IDNR-ISGS IDNR-ISWS

Water Resources Development Act—2007

(Status as of May 25, 2007)

- **A $14 billion bill passed by the Senate (approved 91-4) would improve navigation on the upper Mississippi, help restore the Louisiana coast and authorize hundreds of projects senators sought for their states.**

- **The upper Mississippi and Illinois River area would get $1.95 billion for seven new locks and $1.7 billion for ecosystem restoration.**

- **Taxpayer groups and environmentalists point out the Corps has a backlog of $58 billion unstarted projects that would, at a spending rate of about $2 billion a year, take decades to clear.**

Illinois River Basin Restoration Comprehensive Plan
(Status as of May 25, 2007)

- The USACE is not recommending implementation of the comprehensive plan at this time.

- The USACE does recommend continued implementation of critical restoration projects (16 to date) under the existing Section 519 Authority.

- Additionally, the USACE recommended further studies and analysis related to the plan be continued as are needed. Potential areas for additional study include further refinement to the Technologies and Innovative Approaches component and potentially additional monitoring to address the critical needs to address methodology and approach for monitoring large tributaries and small watersheds.

- If fully implemented these efforts would result in the completion of 16 critical restoration projects at a total cost of $131.2 million.

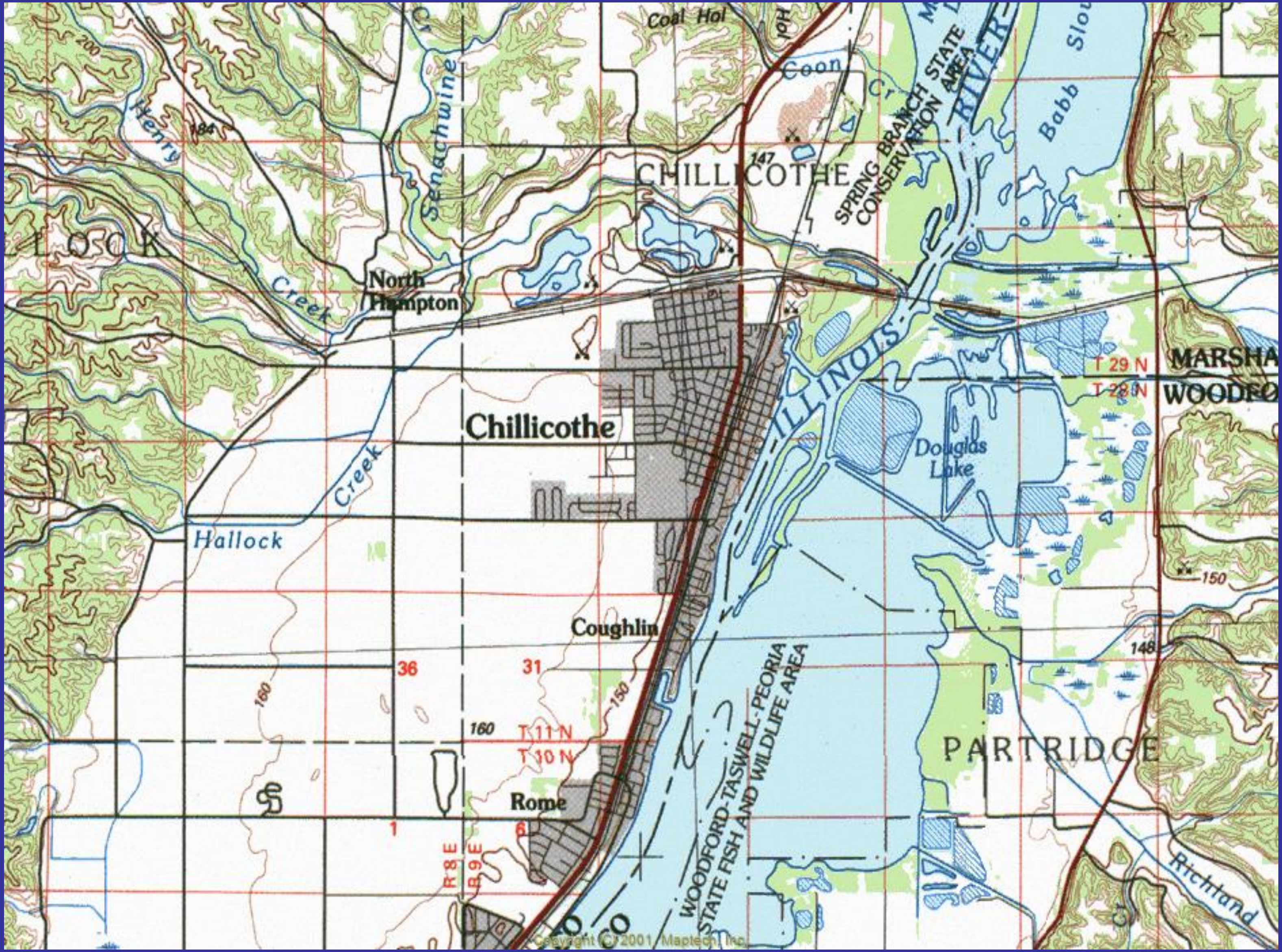
Computerized Inventory and Database Management System

For Viewing Aerial Video Footage
from this project visit the

"Computerized Inventory and Database Management System"

http://ilrdss.sws.uiuc.edu/

Portion of Senachwine Creek Delta



Portion of Senachwine Creek Delta

Illinois State WATER SURVEY

ILLINOIS DEPARTMENT OF NATURAL RESOURCES