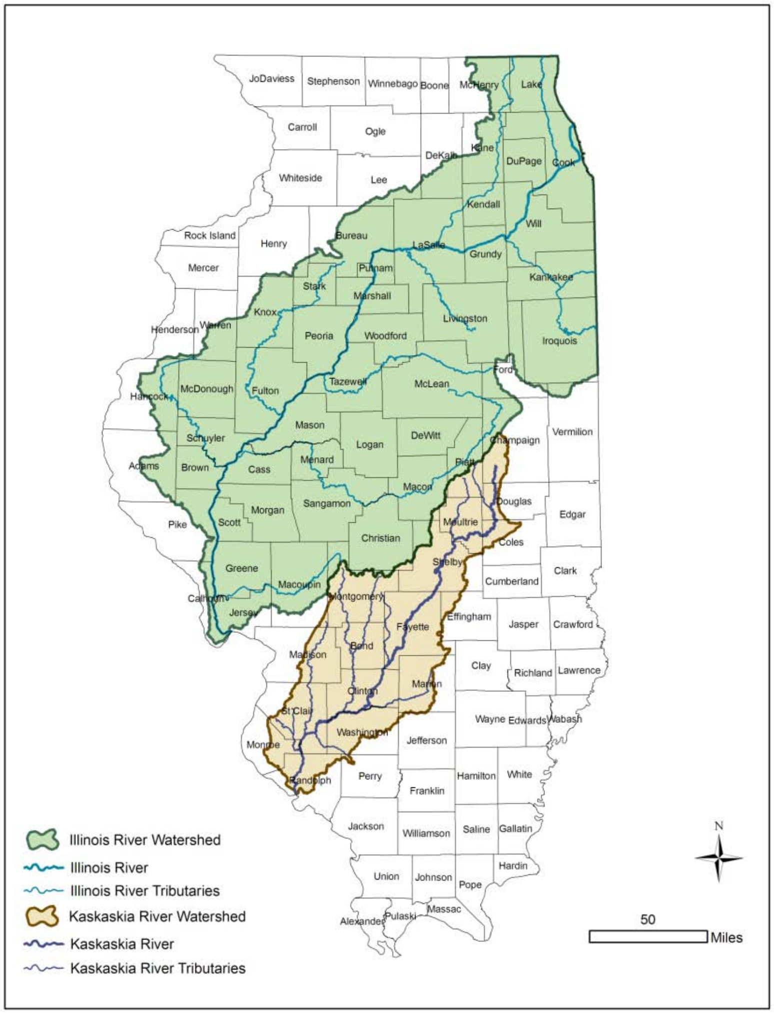
ILLINOIS
CONSERVATION RESERVE ENHANCEMENT PROGRAM



Illinois CREP Conservation Reserve Enhancement Program

2010 Report

October 1, 2009 – September 30, 2010

The Memorandum of Agreement (MOA) between USDA, the Commodity Credit Corporation, and the State of Illinois was amended in October 2010 to include the Kaskaskia River Watershed along with the Illinois River Watershed in the Illinois Conservation Reserve Enhancement Program. The Kaskaskia River Watershed is the second largest river system in Illinois, flowing 292 miles from Eastern Illinois to the Mississippi River. The Illinois General Assembly appropriated $45 Million in the 2010 Capital Budget to re-open CREP and expand the program. The Goals for the Illinois CREP were revised to reflect the expansion and the importance of the connection to the Mississippi River and the Gulf of Mexico:

- *Reduce the amount of silt and sedimentation entering the main stem of the Illinois and the Kaskaskia Rivers by 20 percent;*
- *Reduce the amount of phosphorus and nitrogen in the Illinois River and Kaskaskia River by 10 percent;*
- *Increase by 15 percent, the populations of waterfowl, shorebirds, nongame grassland birds, and State and Federally listed threatened and endangered species such as bald eagles, egrets, and herons;*
- *Increase the native fish and mussel stocks by 10 percent in the lower reaches of the Illinois River (Peoria, LaGrange, and Alton reaches); and*
- *Help meet the Federal goals to reduce nitrogen loading to the Mississippi River and the Gulf of Mexico, thereby helping to reduce hypoxia in the Gulf of Mexico.*

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

The Illinois Conservation Reserve Enhancement Program (CREP) isa State, Federal and Local partnership to restore and protect frequently flooded and environmentally sensitive cropland in the Illinois River Basin. The State offers restoration cost-share and 3 levels of conservation easements on top of federal 15 year contracts to provide long term or permanency to restoration efforts. The Illinois CREP restores cropland in floodplains, erodible cropland adjacent to the floodplain, and cropland that qualifies as farmed wetlands. The program has been tremendously popular and successful. Since the Illinois CREP began in 1998, 126,173.60 acres have been enrolled in the Federal CRP contracts at an average cost of $164/acre. The State has enrolled 1,288 conservation easements on 81,294 acres at an average cost of $612/acre.

The Illinois CREP plays a vital role in the restoration and management of the Illinois River Basin. Almost 35,000 acres of wetlands have been restored. In addition, CREPhas created long, protected stream corridors that improve water quality and stream habitats and help to implement the State's Comprehensive Wildlife Action Plan. It is expanding critical habitats for species in greatest need of conservation and providing plant and community diversity on an agricultural landscape. CREP works with other USDA conservation programs to provide streambank and in-stream restorations and provide enhanced water quality. Highlights of these collective efforts are provided in *A Decade of Changes in the Illinois River Watershed*(Appendix F).

At the State's request, the Illinois CREP was closed to open enrollment in November 2007 due to insufficient State funds. The public support for the program resulted in the General Assembly appropriating $45 Million in capital bond funds to re-open CREP and to expand it to an adjacent watershed, the Kaskaskia River Watershed. (See Map 1)

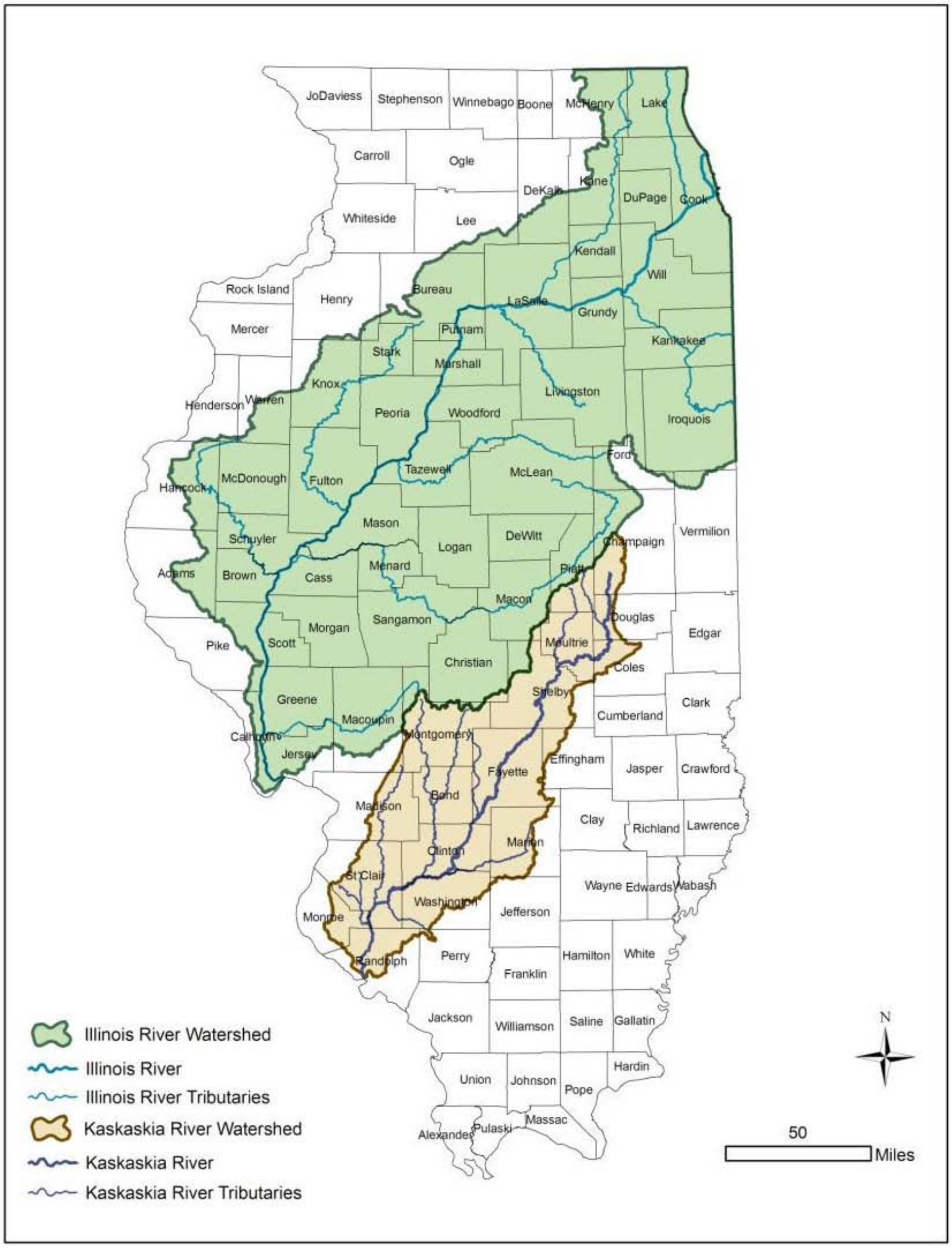
While the Illinois CREP was not open during this reporting period, October 1, 2009 through September 30, 2010, work was still being done to finalize CREP state easements, monitor CREP enrollments, conduct a programmatic environmental assessment, amend the CREP MOA, and prepare for CREP re-opening. The amendment to the CREP Memorandum of Agreement (MOA) to expand eligibility to the Kaskaskia River watershed (See Map) was executed on October 25, 20l0 and CREP enrollment began on December 1, 2010.

In response to recommendations from a CREP Landowner Analysis, the Illinois Department of Natural Resources has developed an on-line State enrollment application and created a new database to improve the efficiency of the program and to track and report program accomplishments. In addition, the CREP enrollments are being targeted to the streams that have identified nutrient and sediment impairments and to complete existing corridors of protection from the previous enrollment period.

Funding has been obtained through a grant from the Illinois Environmental Protection Agency to hire 9 CREP Coordinators in County Soil and Water Conservation District (SWCD) offices to conduct landowner outreach, targeted mailing, and assist with the State Enrollment process. Two foresters will be funded through a State Wildlife Grant and partnership with the National Wild Turkey Federation, USDA Natural Resources Conservation Service, and two sponsoring SWCD offices.

The State has continued monitoring and evaluation of the sediment and nutrient delivery to the Illinois River. Nutrient and sediment data have been collected since 1999. Reduction in sediment delivery from large watersheds takes time to move through the system. However, recent data indicate that both sediment and nutrient delivery to the Illinois River have either stabilized or decreased as a result of implementation of conservation practices in the Illinois River watershed. The most important observation from the nutrient data is the slow decreasing trend of nitrate-N yield from the major tributary watersheds.

The Illinois Natural History Survey's botanical assessment of CREP sites in 2009 and 2010 found that they were more botanically rich and diverse compared to the randomly selected sites for the State's Critical Trends Analysis. Funding for biological assessments has been lacking, but a habitat monitoring program pilot has been developed to evaluate overall habitat quality by use of site visits and visual technology and observations.



Map 1. Illinois and Kaskaskia Rivers Eligible Areas

II. PROGRAM EXPENDITURES

For the reporting period of October 1, 2009 through September 30, 2010, the Federal CREP Program did not enroll new contracts. Total Federal and State enrollment figures from the inception of the program on May 1, 1998 through September 30, 2010 are:

FEDERAL CONTRACTS		
Number of contracts	-	6,625
Total acres contracted	-	126,173.60
Average acres/contract	-	19.00
Average rental rate/acre	-	$164.22 ($128.54 Ave. SRR plus $35.68 Ave. Incentive)
STATE EASEMENTS		
Number of easements	-	1,288
Total acres enrolled	-	81,294.01
Average acres/contract	-	63.11
Average cost/acre	-	$612.21 (Total State Expenditures divided by state enrolled acres)

TECHNICAL ASSISTANCE AND PROGRAM STAFF:

There are three types of technical assistance in the Illinois CREP:

1. Assistance to the landowners during the enrollment process in determining eligibility, options, and practice selection;
2. Assistance to landowners in implementing the approved CREP practice once the property is enrolled in the program; and
3. Assistance to the county Soil and Water Conservation District (SWCD) offices and landowners in the state requirements for execution of the state easement documents.

The USDA Farm Service Agency, USDA Natural Resources Conservation Service, Illinois Department of Natural Resources, Illinois Department of Agriculture and the County Soil and Water Conservation Districts provide the primary technical assistance. However, CREP's successful implementation depends upon the strong partnership between eight Federal and State Agencies, 62 county SWCD offices and many conservation and environmental organizations.

NON-FEDERAL EXPENDITURES

For this reporting period, the State expended a total of $625,732.58 on CREP enrollments, monitoring, data management, technical assistance, reporting and training.

IDNR Administrative Expenses (contract and data mgt., technical assistance, reports, training)	$377,754.47
Monitoring	$247,978.12

The Memorandum of Agreement (MOA) for the Illinois CREP details the formula to determine the overall costs of the program and to determine if the Sate has fulfilled its obligation to provide 20% of the total program costs. The following costs are used to determine the total costs of CREP, the total land retirement costs, which will include the CRP payments made by the Commodity Credit Corporation (CCC) and the easement payments or the bonus payments made by Illinois; the total reimbursement for conservation practices paid by the CCC and Illinois; the total costs of the monitoring program; and the aggregate costs of technical assistance incurred by Illinois for implementing contracts and easements, and a reasonable estimate of the cost incurred by the State to develop conservation plans. Since the CRP contract payments are annual payments, an 8 percent per annum discount rate (per MOA) is used to compare the CRP payments to the State Easement payments.

A Programmatic Budget for Illinois CREP for the Program from 1998 through 2009 was required to be submitted to USDA Farm Service Agency, Conservation and Environmental Programs Division prior to the October 2010 Amendment to the MOA. That Programmatic Budget follows and demonstrates that the state has met its 20 % non-federal match for the 12 years prior to the December 1, 2010 re-opening. (See Table 1)

TABLE 1. PROGRAMMATIC BUDGET

TABLE 1 IL CREP 1998-2009 PRIOR TO 2010 AMENDMENT						
	USDA		USDA Total with		STATE	PROGRAM TOTAL
	Total	Per Acre	NPV SRR @ 8% *	Per Acre	Cash Total	
Acres Enrolled Through 3/9/2010	126,500					
Total CRP Payments***	$301,939,672	$161**	$93,961,461	$50**		
Cost-Share	$15,263,211	$121	$15,263,211			
Monitoring (CASH)					$2,983,690	
IEPA CREP Assistants (319 funds)					$1,000,000	
State Enhancements (CASH)					$61,000,000	
State In-Kind					$2,850,968	
TOTAL Without NPV SRR Discount	$317,202,883				$67,834,658	$385,037,541
% State Match					18%	
TOTAL with NPV SRR Discount			$109,224,672		$67,834,658	$177,059,330
% State Match					38%	

*NPV for SRR @ 8% discount per match formula in the MOA

**Annual SRR with Bonus

***CRP Contracts not less than 14 years or more than 15 years

CRP Payments include annual SRR with Bonus and Maintenance

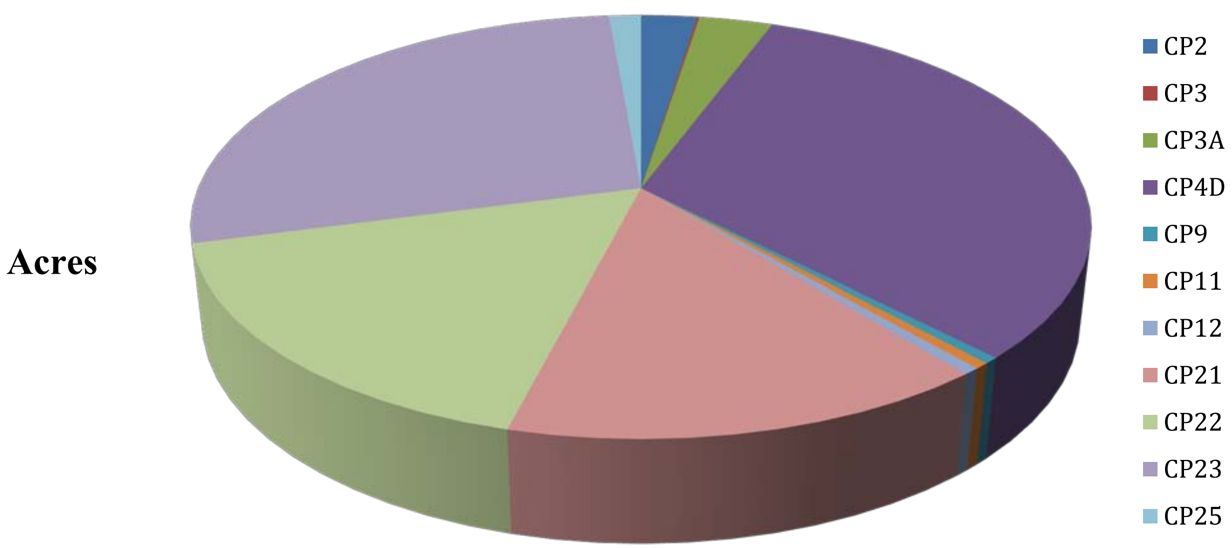
III. CREP ACTIVITIES AND ACCOMPLISHMENTS

The Illinois CREP was not open to new enrollments during this reporting period, October 1, 2009 through September 30, 2010. However, work continued to finalize CREP Conservation Easements, conduct monitoring, amend the CREP Memorandum of Agreement (MOA) to include the Kaskaskia River Basin and prepare to open CREP to new enrollments on December 1, 2010.

Since the Illinois CREP began on May 1, 1998 through the end of the current reporting period (September 30, 2010), CREP has restored and/or protected 126,173.6 acres of land in the Illinois River Basin.

Eligible Practices in the Illinois CREP are:

CP2 Establishment of Permanent Native Grasses
CP3 Tree Planting
CP3A Hardwood Tree Planting
CP4D Permanent Wildlife Habitat
CP9 Shallow Water Areas for Wildlife
CP11 Vegetative Cover – Trees Already Established
CP12 Wildlife Food Plot
CP21 Filter Strip
CP22 Riparian Forest Buffer
CP23 Wetland Restoration
CP25 Rare and Declining Habitats

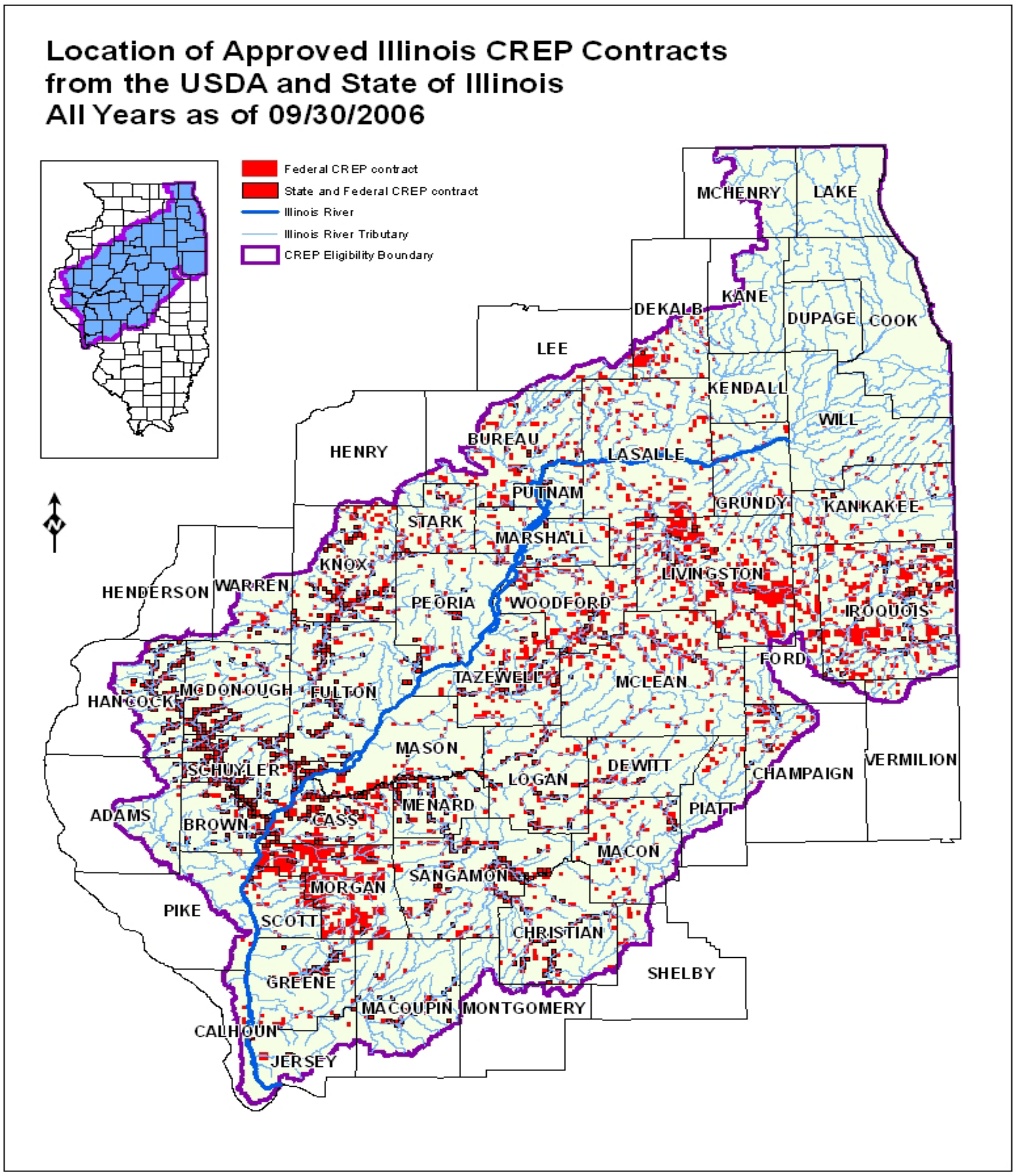


CP2	CP3	CP3A	CP4D	CP9	CP11	CP12	CP21	CP22	CP23	CP25
3017.5	123.4	3968	40448.7	569	580.2	629.6	18690.7	21239.4	34992.2	1724.8

Grass practices have been implemented on 63,881.7 acres or 51.2% of the total CREP enrollments, tree practices on 25,911.0 acres or 20.8% of enrollments, and wetlands have been restored on 34,992.2 acres or 28.0% of the enrollments. CREP is the largest wetland restoration effort in the State and is providing critical habitat in a state that has lost over 90% of its original wetlands.

The Illinois CREP is playing a vital role in the restoration and management of the Illinois River Basin. CREP has created long, protected stream corridors that improve water quality and stream habitats and help to implement the State's Comprehensive Wildlife Action Plan.

The State's capital budget will provide $45 million for CREP to restore the remaining 105,000 acres allocated to Illinois in the MOA.



RESULTS OF THE 2009 FUTURE PLANS AND RECOMMENDATIONS

Recommendations were:

1. Amend the existing CREP MOA to:
   - Expand CREP eligible area to include the Kaskaskia River Watershed;
   - Change CREP goals to replace nongame grassland birds with grassland birds;
   - Change the weighted Erodibility Index to EI $\geq$ 8; and
   - Add the following practices: CP23A, CP27, CP28, CP29, CP30, CP31
2. Target CREP through outreach to better address water quality issues and corridor development
3. Hold trainings and workshops for all agencies field staff
4. IDNR provide additional support for SWCD staff in administering the State side of CREP at the County level
5. Provide mid-management assistance to achieve Wildlife Action Plan objectives in addition to CREP objectives

Results:

1. An Amendment to the CREP MOA was executed between the State and USDA Farm Service Agency in October 2010 that allowed for expansion of the eligible area to the Kaskaskia River Watershed, changed goals to include grassland birds and the EI $\geq$ 8. The recommended practices were not included in this Amendment to expedite the process so that CREP could be re-opened in 2010.
2. IEPA has made funding available for CREP counties to target landowners in areas with high nutrient loadings through mailings and informational meetings. IDNR has created maps for each individual county depicting areas for targeting to better accomplish the CREP goals.
3. Three Inter-agency trainings were held in November, prior to the December 1, 2010 opening of CREP to new enrollments.
4. IDNR is providing funds to reimburse SWCD offices computer seat fees, computer upgrades, and scanners and printers to assist with implementing CREP at the County level.
5. IDNR is working with National Wild Turkey Federation in a pilot program to develop forest management plans on additional acres that will be eligible to enroll in the NRCS Environmental Quality Incentive Program (EQIP) for cost share assistance. (Additional Acres are those not covered by the Federal CRP contract but included in the State Easement)

IV. PARTNERS' ACTIVITIES

IDNR STATE ACRES FOR WILDLIFE ENHANCEMENT (SAFE)

IL WILDLIFE ACTION PLAN – FARMLAND/PRAIRIE CAMPAIGN OVERVIEW

Illinois' nickname "The Prairie State" evokes an image of a vast, unbroken landscape of tallgrass prairie, but because of prairie conversion to agriculture and wetland drainage, vistas of corn and soybeans now exist. Less than 2,600 acres of high-quality prairie currently remain and most grasslands are small, isolated and poorly managed. Thus, prairie is the most severely diminished habitat type in the state and the associated grassland wildlife populations have declined rapidly.

To address these rapidly declining wildlife populations, the Illinois Wildlife Action Plan was developed to establish goals to prevent further population declines. As part of this plan, actions were developed under the Farmland and Prairie Campaign to guide wildlife managers with the development of strategies to improve the quantity, condition, and juxtaposition of grassland, early successional/shrub, and wetland habitats in prairie landscapes.

The Department and its habitat partners (e.g., The Nature Conservancy, Pheasants Forever, Illinois Audubon, Quail Forever) developed two strategies focusing on two different Natural Divisions and on two different groups of grassland wildlife. These initiatives are designed to benefit both game and non-game to broaden public appeal and engage a broad diversity of partners. The Grand Prairie Grassland Wildlife Initiative focuses on providing high quality habitat for ring-necked pheasants and other farmland wildlife, and the Southern Till Plain Wildlife Initiative focuses on the greater prairie chicken and associated grassland wildlife.

Grand Prairie Grassland Wildlife Initiative Objectives

1. Develop 10 grassland bird focus areas approximately township in size that contain 640 acres or more of permanent grasslands and 5% of the remaining landscape in grassland within 25 years.
2. Increase wild ring-necked pheasant pre-hunt populations within the focus areas by 100% within 10 years.
3. Develop three areas (300-500 acres each) of ephemeral wetlands and restore and manage accompanying upland sand prairie habitats for Illinois chorus frogs within 12 years. Delist the Illinois chorus frog within 12 years.

Southern Till Plain Grassland Wildlife Initiative Objectives

1. Develop five "ecological pattern" grassland Bird Conservation Areas of 5,000 acres each using Prairie Ridge Opportunity Area as an anchor on the east and Pyramid Conservation Opportunity Area in the west. The Bird Conservation Areas will be interconnected with 12 satellite areas containing a core of 500 acres of grassland habitat. This objective is scheduled for completing in 30 years.
2. Increase greater prairie-chicken populations by 100% within 10 years.
3. Increase associated grassland songbird populations by 30% within 10 years.
4. Increase northern bobwhite pre-hunt covey by 20% within the Southern Till Plain Natural Division.

IL WILDLIFE ACTION PLAN -
FARMLAND/PRAIRIE CAMPAIGN GOALS AND ACCOMPLISHMENTS

Grassland Habitat Goals

1. An additional 1 million acres of grassland, emphasizing upland. Treeless grasslands larger than 0.5 miles wide and ecological connectivity among grasslands, and other habitat patches, will be established and maintained.
2. Wildlife-value (structure, floral diversity, disturbance regimes) of 1 million existing acres of grassland will be enhanced.
3. Five additional "ecological pattern" grassland Bird Conservation Areas (BCAs; see Fitzgerald et al. 2000) will be established.
4. Three wet prairie areas of 1,000 to 2,000 acres, connected by dispersal corridors, are restored and managed in the Grand Prairie Natural Division.
5. At least 6 areas (300-500 acres each) of ephemeral wetlands and accompanying upland sand prairie habitat will be restored and managed for Illinois chorus frogs in the inland sand areas.
6. High-quality examples of all prairie communities will be restored and managed within all natural divisions within which they occur.

Species in Greatest Need of Conservation – Birds

1. Breeding populations of PIF priority shrub/successional species, including northern bobwhite, American woodcock and Bell's vireo, has doubled.
2. Breeding population of PIF priority grassland species including upland sandpiper, bobolink and grasshopper sparrow has doubled.
3. Use of grassland habitats by migratory grassland sparrows, bobolinks, and meadowlarks has increased by 20%.
4. Implementation of the greater prairie-chicken recovery plan (Walk 2004) is completed including recovery of northern harrier, short-eared owl, upland sandpiper, Henslow's sparrow, loggerhead shrike, and other endangered species.

Harvested Wildlife Resources – Upland Gamebirds

1. Add about 124,000 coveys to the pre-hunt autumn population, estimated at 95,000 coveys in 1999 (Northern Bobwhite Conservation Initiative). This population could support an annual harvest of 876,000 birds.
2. Increase the autumn pre-hunt flock of wild ring-necked pheasants to 2 million birds from an estimated current 800,000 birds.

SAFE PROJECT GOALS

Primary

- Restore grassland and wetland habitats in upland landscapes occupied by tallgrass prairie and herbaceous wetlands at the time of settlement.
- Significantly increase the abundance of grassland wildlife including endangered, economically significant and declining species within highly focused project areas.
- Increase opportunity for high quality, wildlife-based recreation.

Secondary

- Reduce soil erosion and runoff of sediment, nutrients and pesticides from agricultural fields.
- Improve soil quality and increase carbon sequestration.
- Improve water quality.
- Stabilize net income for producers by enrolling portions of farms in conservation practices for 10- or 15-year contract periods.

SAFE Measurable Outcomes

- Within five years, establish and manage 12,300 acres of high quality grassland/wet prairie habitat for ring-necked pheasants and other farmland wildlife in 22focus areas within the Grand Prairie Natural Division.
- Within five years, establish and manage 12,300 acres of high quality grassland/wet prairie habitat for greater prairie chickens and associated grassland wildlife in 9 focus areas within the Southern Till Plain Natural Division.
- Achieve a 100% increase in the abundance of ring-necked pheasants in the focus areas of the Grand Prairie Natural Division within 10 years.
- Achieve a 100% increase in the populations of state endangered greater prairie chickens within 10 years.
- Achieve a 30% increase in the abundance of grassland songbirds within project areas within 10 years.

DUCKS UNLIMITED SUCCESS STORY

Farmer returning farmland to wetlands
By CLARE HOWARD
(Peoria) Journal Star
3:02 AM CST, November 30, 2010

Dave and Dan Jenkins grew up watching their parents struggle every time the Illinois River flooded their Woodford County farm fields, destroying crops and littering piles of driftwood across the land.

Then the brothers became the landowners and farmers, and the Illinois River became an even more unruly neighbor.

"It's never comes up as bad as in the last three to four years," said Dan Jenkins, talking about frequent flooding on their river bottom farmland.

And it's not just driftwood anymore. Once it was an entire house ripped off its foundation by the force of flood water, carried downstream and dumped in the field.

Part of the solution, it is now understood, involves reversing some foundational tenets of Midwest farming that once measured a man's commitment to the land by the amount of drainage tile laid in his fields to convert marshland to productive agriculture.

But it is commitment to the land that led the Jenkins recently to do precisely the opposite - to stop farming 83 acres of river bottom land and return it to wetland.

"This is probably what our parents would have wanted. The land could have been bought up by a big company with an attorney from Chicago . . . someone with no relationship to the land," said Jenkins.

He and his brother remember pulling out cows stuck in mud when the river flooded. They remember moving cows to higher ground every time water covered the farm. They remember their mother out in the fields raking and raking, trying to remove anything the river tossed up on the land that might puncture a tractor tire or derail a combine.

"This ground has been good to our family. We've farmed it. We've lived on it. We've used it for recreation. With kids and grandchildren, we're now looking to the fifth generation," said Dave Jenkins, 62.

"We tiled this land when I was a kid. This is land that has been farmed for over 100 years."

The Jenkins are the first in the area to sign up for a wetland restoration program offered through a collaboration with Ducks Unlimited, the Natural Resources Conservation Service and Wetlands Reserve Enhancement Program.

That collaboration is bringing $2.5 million into the Upper Peoria Lakes region for wetland restoration.

Program participants can receive up to $3,200 an acre for permanent conservation easements.

Ducks Unlimited will contribute 5 percent of the cost of the conservation easement and will provide biological services to lay out the restoration.

Eric Schenck, regional biologist with Ducks Unlimited, said the program's $2.5 million in funding will be used to convert about 500 acres of frequently flooded cropland around Upper Peoria Lake back to wetland.

Enrollment can occur over the next five years, but Schenck wouldn't mind reaching full enrollment in two years.

Landowners retain ownership of the property, but it can no longer be used for agriculture.

Standing on the edge of a harvested field recently, Dan Jenkins said, "This is peat ground and gumbo. If a guy jumps 300 yards away, you can feel it."

A marsh hawk hovered and flitted over the field, harvested for the last time this October after a century of row crop production.

A survey crew from Hutson& Associates in Alton was taking initial readings.

Schenck said topographic surveying is done so he can start planning a restoration that will not affect adjacent land the Jenkins will continue to farm.

He said Upper Peoria Lake is one of four areas in the state categorized as high priority for water quality concerns. Significant amounts of nitrogen and phosphorous run off fields into tributaries that feed the Illinois River and eventually add to the Dead Zone, an area in the Gulf of Mexico devoid of life. For the first time this year, the dead zone peaked at a historic high 7,000 square miles. By contrast, wetlands trap sediment and filter out nitrogen- and phosphorous-rich runoff.

Jenkins and Schenck walked up Richland Creek on the north boundary of the newly enrolled parcel. Dry at this time of year, the creek is a torrent in the spring.

In 1915, a number of drainage districts were formed throughout the state. The thinking then was that Richland Creek and other waterways could be improved by straightening and diking, making farming on the adjacent fields more efficient. Now, that work on the creek is understood to exacerbate sedimentation into the Illinois River.

Over the years, Richland Creek has carried tons of sediment into the river.

"A lot of soil, sand and gravel has left this land," Schenck said looking down into the creek bed.

"Wetlands do the job of creating buffer areas and helping improve this sedimentation."

Jenkins said as boys he and his brother used to play in the creek bed under the bridge, but over the years so much sedimentation from surrounding fields ended up in the creek, the bridge ultimately had to be raised.

Wetland restoration here will help keep soil from washing into the river and also help retain nitrogen and other nutrients applied to cropland.

"We are trying to find places like this where wetland restoration can fit in with today's floodplain," Schenck said. "We can help by strategically placing these wetlands but still allow farming in higher areas of the floodplain."

The program does not compensate for the full value of the land, so it may not be right for a young farmer still trying to make a living through agriculture.

"The Jenkins family is making some important and poignant decisions," Schenck said. "There may not be another generation of farmers in the family, but the decision to put the land into conservation is not giving away assets but taking advantage of a federal program and passing that on to heirs. This decision has long-term positive consequences . . . and leaves a legacy that will transcend their lives, their children's and their grandchildren's. It's a lasting legacy."

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

One of the key missions of Illinois EPA is to monitor and protect the water resources of Illinois; these resources are relied upon for drinking water, fishing, transportation and recreational use and other environmental and economic benefits. One of the most dramatic improvements in water quality that Illinois EPA has documented has taken place on the Illinois River.

Illinois EPA has eight Ambient Water Quality Monitoring Sites on the main channel of the Illinois River. Water chemistry is collected at these sites nine times per year. There are also approximately 250 Intensive Basin Survey Sites in the Illinois River watershed. These sites are monitored "intensively" once every five years. The monitoring includes water chemistry, macroinvertebrates, fish, habitat, sediment and at some sites fish tissue contaminants are collected. This information is cooperatively collected with the Illinois Dept. of Natural

Resources, a partnership that began many years ago and continues annually.

The monitoring shows that the Illinois River mainstream water quality has improved significantly since the passage of the Federal Clean Water Act in 1972. Early improvements were due primarily to point source controls, such as additional treatment requirements and limits on discharges from wastewater treatment plants. The majority of water quality improvements over the last fifteen years have been from the implementation of nonpoint source management programs that reduce urban and agricultural runoff, programs such as CREP.

As reported by the Illinois EPA in their 2008 Integrated Report, of the *stream miles assessed* in the Illinois River Basin for Aquatic Life Use Support attainment, 64.6% were reported as “Good,” 30.4% as “Fair,” and 5.0% as “Poor.” This compares to statewide figures of 61.1% “Good,” 34.8% “Fair,” and 4.1% “Poor.” Regarding *lake acres assessed*, 71.6% were reported as “Good” and 28.4% as “Fair” (no acres reported as “Poor”). This compares to statewide figures of 69.4% “Good” and 30.6% “Fair” (no acres reported as “Poor”).

Illinois EPA continues to participate on the State CREP Advisory Committee and continues to provide financial assistance to local soil and water conservation districts so they can assist landowners to enroll in CREP. Since 1999, more than $1,475,000 of Section 319 grant funds have been spent to hire and train personnel responsible for outreach and the enrollment process.

The benefits derived through this financial support is not only efficiency in the sign-up process to increase CREP enrollment, but it also allows the existing SWCD and NRCS staff to continue to implement the other conservation programs so desperately needed to improve water quality in the Illinois River watershed. Some of those Illinois EPA programs include:
Section 319: Since 1990, the IEPA has implemented 231 Clean Water Act Section 319 projects within the Illinois River Watershed. The Agency receives these federal funds from USEPA to identify and administer projects to prevent nonpoint source pollution. These projects include watershed management planning; best management practices implementation and outreach efforts. Illinois EPA has dedicated over $51 million with another $43 million of local and state funds for total project costs of nearly $95 million towards these projects to help improve the health of the Illinois River, its tributaries and ultimately the Mississippi River and Gulf of Mexico. Hundreds of conservation practices have been installed in the Illinois River watershed by dozens of our partners through the Section 319 program. Traditional practices such as terraces and waterways are dotting the landscape along with porous pavement parking lots, green roofs and miles of rural and urban stabilized streambank.

Since 1990, the 319 NPS program, through on the ground implementation can show load reduction decreases of: 545,136 lbs of nitrogen, 273,014 pounds of phosphorus, and 238,918 tons of sediment per year, each and every year since the Best Management Practices were implemented as a result of 319 grant projects between IEPA and our local partners, in both the private and government sectors.

Construction Site Inspection Program: Illinois EPA continues to implement a program in partnership with several soil and water conservation districts, the majority of them located within the Illinois River Basin. Those partners include the Champaign, DeKalb, DeWitt, Kane/DuPage, Kankakee, Kendall, Lake, Macon, McHenry, Peoria and Winnebago County Soil and Water Conservation Districts. District staff complete on-site NPDES Construction Stormwater Permit inspections and provide technical assistance in implementing best management practices to minimize runoff to nearby water bodies. This program is a natural fit for properly developing acreage that does not qualify for CREP.

OTHER ILLINOIS EPA PROGRAMS THAT COMPLIMENT CREP:

Total Maximum Daily Load (TMDL):

USEPA has approved 492 completed TMDL evaluations and Illinois EPA is currently developing another 303 TMDLs. TMDLs are a tool that we use to restore impaired watersheds so that their waters will meet Water Quality Standards and Full Use Support for those uses that the water bodies are designated. A TMDL looks at the identified pollutants and develops, through water quality sampling and modeling, the amount or load reductions needed for the water body to meet its designated uses.

Partners for Conservation:

A total of 36 lake monitoring (study) or protection/restoration projects have been conducted in the Illinois River Basin via the Illinois EPA's Illinois Clean Lakes Program and Priority Lake and Watershed Implementation Program. Over $7.5 million of local and state funds have been allocated for these efforts.

Excess Nutrients: A High Profile Water Quality Issue "

A Nutrient Summit was held on September 13-14, 2010, at the University of Illinois-Springfield. Invitees included over 250 people representing government, environmental groups, municipal and industrial wastewater dischargers, agricultural groups, academia, non-governmental organizations, and consulting firms with an interest in the topic of nutrient pollution.

NUTRIENT SUMMIT AGENDA AND PRESENTATIONS

The impact of excess nitrogen and phosphorus in rivers, lakes, streams and the Gulf of Mexico has become a very high profile water quality issue. Under the right conditions, nutrients can cause excessive algal blooms, low oxygen and nuisance conditions that adversely impact aquatic life, drinking water and recreational uses of the water. The Illinois Environmental Protection Agency has identified many waterbodies in the state with these problems. Nitrogen and phosphorus come from municipal wastewater treatment, urban stormwater, row crop agriculture, livestock production, industrial wastewater and combustion of fossil fuels. In other words, most aspects of modern society contribute to this pollution problem. The proportion of loading to a particular waterbody from these sources varies from watershed to watershed, with point sources and urban stormwater being most important in urbanized watersheds and row crop and/or livestock production being predominant contributors in agricultural watersheds.

Current Management Approaches and Issues

- The Clean Water Act framework requires: the establishment of water quality standards that protect aquatic life and/or other beneficial uses of the water; monitoring and assessment to determine attainment of standards; listing of waters not attaining and development of Total Maximum Daily Loads (TMDL) to limit pollution to those waterbodies.
- TMDL load limits are required to be implemented through National Pollutant Discharge Elimination System permits, which address point sources—municipal or industrial wastewater dischargers. Management of non-point source pollution is through voluntary implementation of best management practices (BMP), so there is no guarantee that TMDL load limits allocated to non-point sources will be achieved.
- Cost-share incentives to implement/install BMPs include federal Conservation Reserve Program and state Conservation Reserve Enhancement Program, state Partners in Conservation Program, various Farm Bill conservation programs and Section 319 non-point source management grants. The federal Farm Bill programs, though relatively well-funded, are not consistently targeted at water quality improvement, nutrient reduction or locations most in need of BMPs.
- There are various other efforts through state farm groups, industry and non-profit organizations to promote the use of agricultural BMPs, but these efforts are not consistently coordinated nor targeted to particular watersheds. In addition, the degree of implementation of key nutrient-related BMPs is not comprehensively quantified or mapped, so the collective status of BMP implementation in the state is unknown.
- Available data do indicate that Illinois producers are not over-applying fertilizers or manure and that the traditional suite of conservation practices will not be adequate to achieve such large reductions. Absent the development of an economically viable third

crop such as a perennial for biofuels, the costs to significantly reduce nutrient losses from agriculture could be billions of dollars.

- New and expanding municipal wastewater treatment plants are required by Illinois Pollution Control Board regulation to limit phosphorus in their discharges. However, plants currently implementing this requirement represent only 6.5 percent of municipal dischargers. The collective cost of implementing nutrient removal at all municipal wastewater treatment plants to meet stringent water quality standards would be huge. Especially problematic would be treatment installation at smaller facilities.

WHAT U.S. EPA EXPECTS

U.S. EPA expects states to establish numeric water quality standards for phosphorus and nitrogen and to carry out the other pieces of the Clean Water Act framework, as appropriate. U.S. EPA's Inspector General issued a finding in 2009 that U.S. EPA had not done enough to get state numeric nutrient water quality standards established. In response, U.S. EPA has developed a "corrective action plan" which includes a commitment to identify states where federal promulgation of nutrient water quality standards is required. U.S. EPA has been petitioned and sued by various environmental groups for failure of states to establish numeric nutrient standards, so there is mounting pressure on U.S. EPA and states to address nutrients by developing numeric nutrient water quality standards.

States have concerns on the issue of numeric nutrient water quality standards. They raise two main points:

1. There is not a straightforward relationship between nutrient concentration in the water and adverse effects, so a statewide "one size fits all" standard that meets the test of scientific defensibility is almost unachievable; and
2. The Clean Water Act programs are effective for point sources but do not assure reductions from non-point sources that are often the predominant contributors of nutrients in a particular watershed.

OBJECTIVES FOR THE NUTRIENT SUMMIT AND BEYOND

The intent of the September 13-14 Nutrient Summit was to present factual information as well as various stakeholder perspectives so that all attendees could hear the same information at the same time and ask clarifying questions, rather than debating potential solutions.

On October 14, 2010, a Nutrient Policy Roundtable was convened by a small number of stakeholder representatives—policy leaders from government, agriculture, municipal/industrial dischargers, environmental groups, and technical assistance providers/researchers. The intent of the Policy Roundtable was to begin identifying an action plan with short and longer term actions to address nutrients in Illinois, as they impact in-state waters as well as the Gulf of Mexico. This is the beginning of what we hope is a collaborative, problem-solving process that will require discussion and involvement beyond just the Summit attendees, and will eventually affect stakeholders in all sectors. The goal is to affect a state plan to get nutrient reductions from all sources that includes accountability by all.

Following the October 14th Nutrient Summit meeting a follow up meeting comprised of key representative from each of the potentially affected constituency groups met to discuss next steps. These steps included additional work on the data gap analysis, developing outreach strategies and establishing sub-work groups as needed during the process of developing a Nutrient Strategy for Illinois. The first of these workgroups, the Nutrient Standards Workgroup will convene for its first meeting on January 6, 2011.

In conclusion, the Illinois River is a valuable resource that we are working hard to protect and restore. Illinois EPA will continue long-term monitoring of the river and its watershed and will continue to pursue funds to help implement CREP and other water quality restoration and protection projects and to work with citizen groups and local government and industry to continue the progress we have made.

CREP COORDINATOR REPORT

The objective of the Illinois Conservation Reserve Enhancement Program (CREP) Coordinator position is to provide well trained, effective staff to implement the Conservation Reserve Enhancement Program. The Coordinators cover counties throughout Illinois. The distribution of staff will be strategically placed to insure the highest level of effectiveness giving priority to areas on the Total Maximum Daily Load impaired waters listing within the 68 eligible counties in the Illinois and Kaskaskia River Basins. Priority will also be given to the most up to date list of the United States Environmental Protection Agency (EPA) 303(d) list of impaired streams in both the Illinois and Kaskaskia River basins. Each CREP Coordinator will be trained to implement a marketing campaign to reach the eligible citizens to participate in the State CREP, educate landowners on appropriate applicable federal and state forms, and monitor the State CREP Conservation easements for landowner compliance.

Landowners who become aware of the program and wish to enroll eligible acres often do not have the knowledge or skills that will allow them to accomplish the enrollment process correctly and easily, requiring the need for trained staff at the district level to assist with the enrollment process. In high workload counties, CREP Coordinators are critical to the success of CREP. CREP Coordinators can focus on the volumes of paper and coordination requirements of this one program to expedite the process from several years to a few months, allowing more citizens to be served. The Soil and Water Conservation Districts (SWCDs) and the CREP Coordinators are the only means of accomplishing the required tasks.

To assure that CREP Coordinators are fully trained and able to do the work, one experienced CREP Coordinator provides training and support for the eligible SWCDs.
The CREP Coordinators salaries and expenses are paid through the funding of an IEPA 319 Grant. The Scope of Work includes:

- Complete IDNR reports needed to allow for load reduction calculations based on the implementation of CREP contracts.
- Implement an outreach program to each community eligible for CREP.
- Research each subject property to determine eligibility. Validate additional acres.
- Meet and walk property with landowner to discuss program and their eligibility and options.
- Calculate the 3 funding options for enrollment. Confirm soil types & ownership.
- Retain and direct surveyor to delineate easement boundaries.
- Coordinate the easement boundaries and satisfy exceptions with a title company.
- Coordinate the negotiation of easement language and which extension (15/35 yr) or permanent easement.

- Record easements.
- Work closely with IDNR on each step of processing.
- Coordinate with FSA for cost share eligibility and vouchering.
- Furnish documentation for tracking system.
- Perform compliance inspections.
- Educate new easement landowners.

ILLINOIS DEPARTMENT OF AGRICULTURE

The Illinois Department of Agriculture administers numerous soil and water conservation programs that produce environmental benefits in the Illinois River Watershed. In total, the Partners for Conservation Program, administered by IDOA, has allocated over $3.2 million dollars to the 46 counties that have significant acreage in the Illinois River Watershed for cost-sharing the installation of upland soil and water conservation practices. Administered by the Department, with assistance from County Soil and Water Conservation Districts (SWCDs), this program provides up to 70% of the cost of constructing conservation practices that reduce soil erosion and protect water quality.

Eligible conservation practices include terraces, grassed waterways, water and sediment control basins, grade stabilization structures and nutrient management plans. Nearly 800 projects have been completed by the SWCD's with significant benefits in the Illinois River Basin during the last 3 fiscal years. Individual conservation projects were completed with funding of nearly $2 million dollars. These projects are responsible for bringing soil loss to tolerable levels on hundreds of acres of land. This translates into over 54,500 fewer tons of soil loss each year, or the equivalent of more than 2,400 semi truckloads of soil saved.

The Department of Agriculture provided funding to the county SWCD offices in the Illinois River Watershed for operational expenses. Specifically, these funds were used to provide financial support for SWCD offices, programs, and employees' salaries. Employees, in turn, provided technical and educational assistance to both urban and rural residents of the Illinois River Watershed. Their efforts are instrumental in delivering programs that reduce soil erosion and sedimentation and protect water quality.

In an effort to stabilize and restore severely eroding streambanks that would otherwise contribute sediment to the Illinois River and its tributaries, the Department of Agriculture, with assistance from SWCDs, is administering the Streambank Stabilization and Restoration Program (SSRP). The SSRP, funded under the Partners for Conservation Program, provides funds to construct low-cost techniques to stabilize eroding streambanks. In all, over 4.8 miles of streambank have been stabilized to protect adjacent water bodies during the past 4 fiscal years. Another environmentally oriented Partners for Conservation Program administered by the Department of Agriculture is the Sustainable Agriculture Grant Program. Grants are made available to individuals, organizations and universities for conducting research, demonstration, or education programs or projects related to profitable and environmentally safe agriculture in such areas as local food systems, cover crops, alternative crops, grassland management, composting, sustainable beef production and organic production.

C2000/PARTNERS FOR CONSERVATION

Conservation 2000 Partners for Conservation (formerly Conservation 2000 - C2000) is a multi-agency, multi-million dollar comprehensive program is designed to take a holistic, long-term approach to protecting and managing Illinois' natural resources. The Illinois Department of Natural Resources administers the Ecosystems Program and the Critical Trends Assessment Program (CTAP), a statewide ecosystem assessment and monitoring program.

The Ecosystems Program**,** a landmark program, is based upon an extensive network of local volunteers working to leverage technical and financial resources to promote ecosystem based management primarily on private lands. With 95% of the state in private ownership (non-state owned), the main objective of the program is to assist in the formation of public/private partnerships, *Ecosystem Partnerships*, to develop plans and projects on a watershed scale with an ecosystem-based approach. There are two key criteria established for the Ecosystems Program. One, that they must be voluntary, and based on incentives rather than government regulation; and, two, they must be broad-based, locally organized efforts, incorporating the interests and participation of local communities, and of private, public and corporate landowners.

Currently there are 41 Ecosystem Partnerships covering 86% of Illinois. Half of those partnerships are located in counties that comprise the Illinois River watershed; 21 to be exact. They are Big Rivers, Chicago Wilderness, DuPage River Coalition, Fox River, Headwaters, Heart of the Sangamon, Illinois River Bluffs, Kankakee River, Lake Calumet, LaMoine River, Lake Michigan Watershed, Lower Des Plaines, Lower Sangamon Valley, Mackinaw River, North Branch of the Chicago River, Prairie Parklands, Spoon River, Thorn Creek, Upper Des Plaines, Upper Salt Creek, and Vermillion Watershed Task Force.

Since its inception in 1996, the C2000 Program has awarded more than $16.4 million in C2000 grants to Ecosystem Partnerships in the **Illinois River watershed** basin for projects providing a variety of conservation practices and outreach. Another $17.75 million has been leveraged as match for these projects for a total of more than $34 million for 489 projects. Accomplishments from these projects include: 15,899 acres of habitat restoration, 169,756 feet of stream bank restoration, 1,814 sites have been or are being monitored, and more than 685,745 people have been educated on watershed protection and restoration.

MUD TO PARKS

Mud to Parks Program is a unique, one-of-a-kind program taking river mud and returning the soil to the land. It was envisioned by Illinois' natural resource scientists in the late 1990's to address the sedimentation that is choking Illinois' rivers. Removing the sediment that was once Illinois topsoil, and reusing it for parks and wildlife, is a win-win solution for our environments. Sedimentation is the biggest problem facing Illinois' river systems. In the Illinois River alone, more than 6.6 million tons of sediment go into the river basin annually. Soil eroded from rural and urban areas settles out in rivers, wetlands, detention basins, and water supply lakes. This decreases water storage capacity, reduces navigability, destroys habitat for fish and waterfowl, and impacts other recreational resources. Most river backwaters have lost over 70 percent of their capacity and are now less than two feet deep.

Mud to Parks attempts to find beneficial uses for the sediment that is clogging Illinois' rivers and lakes. The program views sediment as a resource out of place and it seeks to find innovative projects that reuse the sediment as topsoil. For the first time, the Mud to Parks program will begin accepting applications from local units of government requesting funding for sediment removal and valuable reuse projects. The primary objective of the Mud to Parks grants is to encourage the removal of sediment from Illinois' waterways to reuse for valuable projects that would create habitat, benefit the public and have long term sustainable impacts.

NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

Mississippi River Basin Healthy Watersheds Initiative (MRBI)

To improve the health of the Mississippi River Basin, including water quality and wildlife habitat, the Natural Resources Conservation Service is developing the Mississippi River Basin Healthy Watersheds Initiative (MRBI). Through this new Initiative, NRCS and its partners will help producers in selected watersheds in the Mississippi River Basin voluntarily implement conservation practices that avoid, control, and trap nutrient runoff; improve wildlife habitat; and maintain agricultural productivity.

These improvements will be accomplished through a conservation systems approach to manage and optimize nitrogen and phosphorous within fields to minimize runoff and reduce downstream nutrient loading. NRCS will provide producers assistance with a system of practices that will control soil erosion, improve soil quality, and provide wildlife habitat while managing runoff and drainage water for improved water quality.

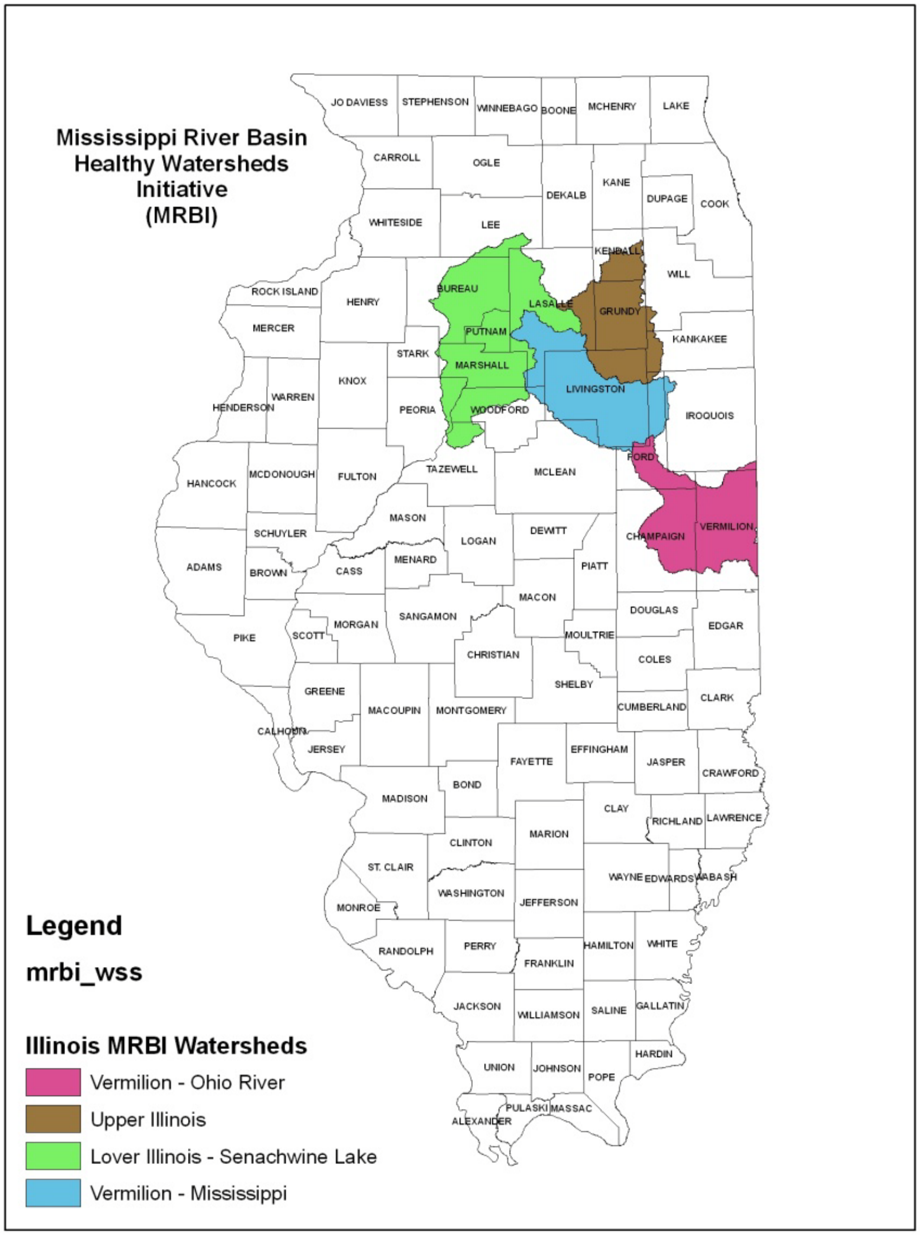
The Initiative will build on the past efforts of producers, NRCS, partners, and other State and Federal agencies in the 12-State Initiative area to address nutrient loading in the Mississippi River Basin. Nutrient loading contributes to both local water quality problems and the hypoxic zone in the Gulf of Mexico. The 12 participating States are Arkansas, Kentucky, Illinois, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Missouri, Ohio, Tennessee, and Wisconsin. MRBI will be implemented by NRCS through the the NRCS programs and initiatives listed below.

NRCS will offer this Initiative in FYs 2010 through 2013, dedicating at least $80 million in each fiscal year. This is in addition to the agency's regular program funding in the 12 Initiative States and funding by other Federal agencies, States, and partners and the contributions of producers.

Eligible Illinois watershed areas are within the CREP eligible areas

Lower Illinois-Senachwine Lake
Upper Illinois
Vermillion River (Upper Mississippi River sub-basin)
Vermillion (Upper Ohio River sub-basin)

CREP compliments the MRBI by using practices that address nutrient loading to the Mississippi River Basin and offers conservation easements to provide long term reduction and protection. The CREP Coordinators are targeting efforts to reach private landowners eligible for CREP in these watersheds.



For additional information on NRCS conservation programs, please visit www.nrcs.usda.gov.

Illinois Department of Natural Resources (IDNR) and its conservation partners will continue to work as a team to implement CREP and other conservation programs designed to assist private landowners. Priority will be given to watersheds identified by Natural Resources Conservation Service (NRCS) and Illinois Environmental Protection Agency (IEPA) as having high mean total concentrations of nitrate and phosphorous; and CREP will be integrated with NRCS' Mississippi River Basin Healthy Watersheds Initiative to improve the overall health of the Mississippi River Basin and assist with Gulf Hypoxia issues. CREP is also a good fit with initiatives related to climate change and carbon sequestration.

US FISH AND WILDLIFE SERVICE/PARTNERS

The US Fish and Wildlife Service Partners for Fish and Wildlife Program (Partners) has supported the Illinois River Conservation Reserve Enhancement Program (CREP) since its inception. The Illinois River CREP has provided opportunities on a landscape scale for restoration, enhancement, and preservation of natural habitats on private land. The net benefit of the Illinois CREP is the significant benefit for Federal Trust Resources produced by the large scale restoration and preservation of floodplain and riparian habitat in the Illinois River Watershed. The Federal Trust Resources benefited include migratory waterfowl, shorebirds and neotropical migrants that use wetland and forested floodplain habitats to feed and rest as well as the species that nest and raise their young in the restored habitats. Federally listed threatened and endangered species, particularly the threatened decurrent false aster (*Boltoniadecurrens*) have benefited from the Illinois CREP. Equally significant are both direct and indirect benefits to National Wildlife Refuge lands located on the Illinois River that accrue as a result of expanded habitat adjacent and near the Refuges, as well as improved water quality that results from implementing approved conservation practices.

Partners primary contribution to the Illinois River CREP has been technical assistance through participation on the CREP Advisory Committee, providing technical and policy assistance input to the program. At the local level, Partners personnel coordinate with local NRCS, SWCD, and Illinois DNR staff as necessary on individual or groups of projects. CREP has opened a host of opportunities for habitat restoration, enhancement, and preservation on private land that fulfills the objectives of a broad coalition of Federal, State, local, and non-government conservation organizations.

Within the Illinois River Watershed, individual Partners projects compliment CREP and other habitat programs. The Partners program provides a tool for restoration and enhancement of habitats on private lands that may not be eligible for other landowner assistance programs. Partners local coordinators also review the full range of landowner assistance programs with each potential cooperator and refer landowners to CREP and other USDA and Illinois DNR programs that best meet their habitat development and economic goals.

ILLINOIS FARM BUREAU

Illinois Farm Bureau (IFB) continues to publicize and promote the Conservation Reserve Enhancement Program (CREP). IFB also used their statewide radio network to highlight details of the program. Information on CREP was sent directly to county Farm Bureaus® (CFB) via e-mail and through county Farm Bureau mail system.

Illinois Farm Bureau continues to provide input about CREP through various groups and committees and also continues to voice support for the program. CREP is another tool producers can use that provides cost share incentives and technical assistance for establishing long-term, resource-conserving practices and is a positive program in Illinois.

ASSOCIATION OF ILLINOIS SOIL AND WATER CONSERVATION DISTRICTS

The AISWCD, in partnership with the Illinois Environmental Protection Agency and the Illinois Department of Natural Resources, helps with administration of the CREP program, by providing funding to SWCDs through a 319 grant. The grant is given to certain SWCDs who express the need of additional support in their District office to complete CREP related duties. The AISWCD serves on the CREP Advisory Committee.

ENVIRONMENTAL DEFENSE FUND (EDF)/THE NATURE CONSERVANCE (TNC)
Environmental Defense FundPartnership Project with The Nature Conservancy - December 2010

A new partnership will soon be working with local farmers on an innovative approach to protect drinking water supplies to the City of Bloomington and improve water quality in the Mackinaw River. Environmental Defense Fund and The Nature Conservancy are joining with the City of Bloomington, USDA's Farm Service Agency and Natural Resources Conservation Service, the McLean County Soil and Water Conservation District, and the University of Illinois to launch a voluntary, incentive-based program focused on constructing wetlands in strategic locations within drinking supply watersheds that will intercept tile- drained runoff from agricultural farmlands. The focus on Six Mile Creek and Money Creek by this partnership builds on The Nature Conservancy's 20 years of science work in the Mackinaw River watershed, more than 30 years of work by the City of Bloomington to comply with drinking water and surface water quality regulations, and the policy and science expertise of the Environmental Defense Fund. Additional partners engaged in this effort include the McLean County GIS Consortium and scientists from Illinois State University.

Partners plan to engage highly qualified technical service providers to work with interested farmers and other landowners who have potential sites for treatment wetland installations. These advisors will help landowners enroll in the Farmable Wetlands Program of the Conservation Reserve Program, a USDA voluntary conservation program that provides good financial incentives to landowners for installing practices such as ADWT wetlands. USDA staff will help with outreach to producers. Partners will secure grant funding to offset costs to the producers so little to no installation costs will be incurred by landowners.

These wetlands will be designed to retain agricultural runoff and reduce nitrogen concentrations upstream from drinking water reservoirs and the Mackinaw River; thus, providing benefits to the local community's drinking water, the Mackinaw River, and ultimately the Gulf of Mexico. The wetlands are a natural fit in the landscape – they provide beauty and recreation for landowners and important habitat for wildlife while serving as a long-lasting, highly cost-effective way to address local drinking water concerns and downstream water quality.

Challenges related to excessive loading of nitrogen goes beyond local drinking water concerns. Nitrogen originating from states within the Mississippi River Basin contributes substantially to the Dead Zone in the Gulf of Mexico. In fact, the Upper Mississippi River Basin (UMRB) contributes more than 50% of the nitrate reaching the Gulf of Mexico[1]. The UMRB, particularly the "Corn Belt," is one of the most productive agricultural regions in the world and is dominated by intensive, high production, row-crop agriculture. The extensive subsurface drainage systems that have enabled many producers to realize significant increases in productivity have also created the major unintended effect of creating a highly efficient conduit of nitrogen to the Mississippi River and the Gulf of Mexico. Subsurface agricultural drainage short circuits the natural drainage pattern, flushing nitrogen from farm fields and funneling it directly into local rivers and streams, and from there into the Mississippi and the Gulf of Mexico. Illinois has the highest total area of subsurface drainage of any state in the UMRB[i] and contributes 17% of the nitrogen and 13% of the phosphorus delivered to the Gulf of Mexico[ii].

[1]Goolsby et al. 1999

[1] 4.7 million ha, Sugg 2007

[1] Alexander et al. 2008

V. FUTURE PLANS AND RECOMMENDATIONS

- Implementation of an online State application and database to expedite enrollment process;
- Improve communications with partners and develop a system to track their in-kind or cash contributions in CREP;
- Develop Kaskaskia River Watershed monitoring plan;
- Develop a citizen volunteer River Watch Monitoring Program for both the Illinois River and Kaskaskia River Watershed to better engage the public in CREP;
- Continue the development of the CREP habitat evaluation program with the University of Illinois Natural History Survey;
- Develop a Database for CREP easement compliance monitoring;
- Hold Quarterly CREP Advisory Committee Meetings to keep all organizations aware of enrollments and opportunities for collaboration; and
- Create a CREP Technical Committee to resolve issues in implementing CREP and achieving the program goals

By working together, the conservation partners will meet both the goals of CREP and the objectives of private landowners. They will help implement the Illinois Wildlife Action Plan by creating and enhancing habitat corridors along Illinois' rivers and tributaries for species protection and migration. The partners will develop strategies to facilitate landowner enrollment in many different conservation programs and ensure the programs are implemented effectively. Continued monitoring efforts will provide the long-term data required to properly assess changes in Illinois' watersheds, and assessment of these changes will ensure efficient implementation of CREP and other conservation programs.

VI. MONITORING AND EVALUATION OFTHE ILLINOIS RIVER

Appendix A: Monitoring and Evaluation of Sediment and Nutrient Delivery to the Illinois River

Appendix B: The Bellrose Restoration Projects Monitoring 2010 Update

Appendix C: A Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois

Appendix D: Additional Botanical Assessment of Conservation ReserveEnhancement Program (CREP) Sites in Illinois

Appendix E: A Summary of the Illinois Conservation Reserve Enhancement Program Habitat Monitoring Program Pilot Study

Appendix F: A Decade of Change in the Illinois River Watershed

Monitoring and Evaluation of Sediment and Nutrient Delivery to the Illinois River: Illinois River Conservation Reserve Enhancement Program (CREP)

by
Center for Watershed Science
Illinois State Water Survey
Illinois Department of Natural Resources

Prepared for the
Office of Resource Conservation,
Illinois Department of Natural Resources

November 2010

This report was printed on recycled and recyclable papers.

Contents

List of Tables

List of Figures

List of Figures (continued)

List of Figures (concluded)

Monitoring and Evaluation of Sediment and Nutrient Delivery to the Illinois River: Illinois River Conservation Reserve Enhancement Program (CREP)

by
Center for Watershed Science
Illinois State Water Survey
Illinois Department of Natural Resources

1. Introduction

The Illinois River Conservation Reserve Enhancement Program (CREP) was initiated as a joint federal/state program with the goal of improving water quality and wildlife habitat in the Illinois River basin. Based on numerous research and long-term data, the two main causes of water quality and habitat degradations in the Illinois River were known to be related to sedimentation and nutrient loads. Based on this understanding, the two main objectives of the Illinois River CREP were stated as follows:

1) Reduce the amount of silt and sediment entering the main stem of the Illinois River by 20 percent.

2) Reduce the amount of phosphorous and nitrogen loadings to the Illinois River by 10 percent.

To assess the progress of the program towards meeting the two goals, the Illinois Department of Natural Resources (IDNR) and the Illinois State Water Survey (ISWS) are developing a scientific process for evaluating the effectiveness of the program. The process includes data collection, modeling, and evaluation. Progress made so far in each of these efforts is presented in this report.

Acknowledgments

The work upon which this report is based was supported by funds provided by the Office of Resource Conservation, Illinois Department of Natural Resources. Ms. Debbie Bruce and Richard Mollahan managed the project for IDNR and provided the proper guidance and support to design and operate the monitoring program and the associated research. Their continued support and guidance is greatly appreciated.

Several Illinois State Water Survey staff participated and contributed towards the successful accomplishment of project objectives. Jim Slowikowski, Kip Stevenson, Mike Smith,

Josh Stevenson, and Amy Russell are responsible for the data collection and analysis. Laura Keefer was responsible for analysis of the land use data with assistance from Sandy Jones and Brad Larson. Jas Singh and Yanqing Lian were responsible for the development of the watershed models. Vern Knapp provided the analyses on variability and trends in precipitation and streamflow in the Illinois River basin. Momcilo Markus analyzed the Illinois Environmental Protection Agency nutrient data for analyses of long-term trends. David Crowder analyzed the Benchmark Sediment Monitoring data for long-term trend analysis. Becky Howard and Patti Hill prepared the draft and final reports.

2. Monitoring and Data Collection

The monitoring and data collection component consist of a watershed monitoring program to monitor sediment and nutrient for selected watersheds within the Illinois River basin and also to collect and analyze land use data throughout the river basin. Historically, there are a limited number of sediment and nutrient monitoring stations within the Illinois River basin, and most of the available records are of short duration. For example, figure 2-1 shows all the active and inactive sediment monitoring stations within the Illinois River basin prior to the start of monitoring for CREP. Out of the 44 stations shown in the map, only 18 stations had records longer than 5 years and only 8 stations had more than 10 years of record. Therefore the available data and monitoring network was insufficient to monitor long-term trends especially in small watersheds where changes can be observed and quantified more easily than in larger watersheds.

To fill the data gap and to generate reliable data for small watersheds, the Illinois Department of Natural Resources funded the Illinois State Water Survey to initiate a monitoring program that will collect precipitation, hydrologic, sediment, and nutrient data for selected small watersheds in the Illinois River basin that will assist in making a more accurate assessment of sediment and nutrient delivery to the Illinois River.

Sediment and Nutrient Data

Five small watersheds located within the Spoon and Sangamon River watersheds were selected for intensively monitoring sediment and nutrient within the Illinois River basin. The locations of the watersheds and the monitoring stations are shown in figures 2-2 and 2-3 and information about the monitoring stations is provided in table 2-1. Court and North Creeks are located within the Spoon River watershed, while Panther and Cox Creeks are located within the Sangamon River watershed. The Spoon River watershed generates the highest sediment per unit area in the Illinois River basin, while the Sangamon River watershed is the largest tributary watershed to the Illinois River and delivers the largest total amount of sediment to the Illinois River. The type of data collected and the data collection methods have been presented in detail in the first progress report for the monitoring program (Demissie et al., 2001) and in the Quality Assurance Project Plan (QAPP) given in Appendix A. This report presents the data that have been collected and analyzed at each of the monitoring stations.

Table 2-1. Sediment and Nutrient Monitoring Stations Established for the Illinois River CREP

Station ID	*Name*	*Drainage area*	*Watershed*
301	Court Creek	66.4 sq mi (172 sq km)	Spoon River
302	North Creek	26.0 sq mi (67.4 sq km)	Spoon River
303	Haw Creek	55.2 sq mi (143 sq km)	Spoon River
201	Panther Creek	16.5 sq mi (42.7 sq km)	Sangamon River
202	Cox Creek	12.0 sq mi (31.1 sq km)	Sangamon River

Figure 2-1. Locations of available in-stream sediment data
within the Illinois River watershed, 1981-2000

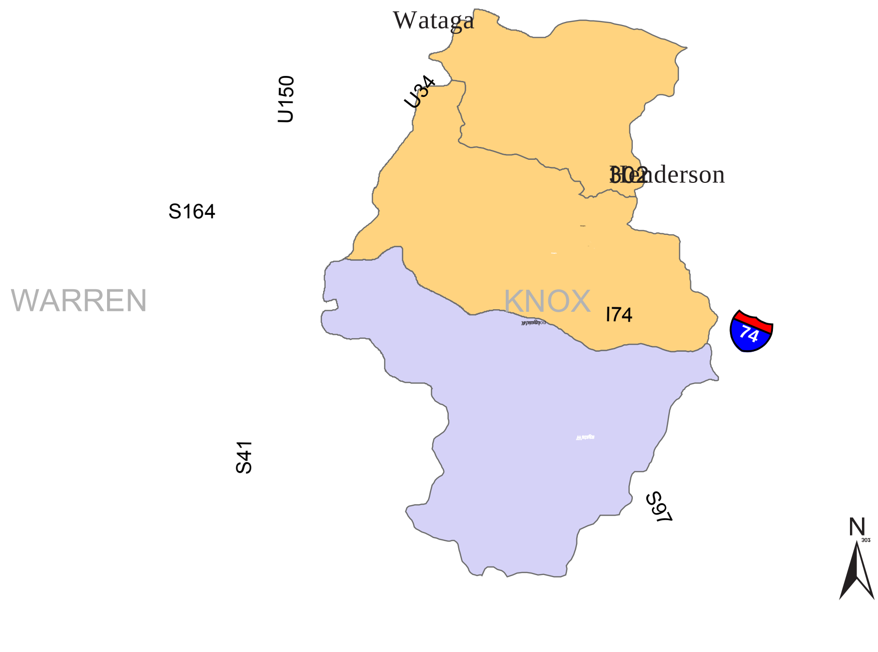


Figure 2-2. Location of monitoring stations in Court and Haw Creek watersheds

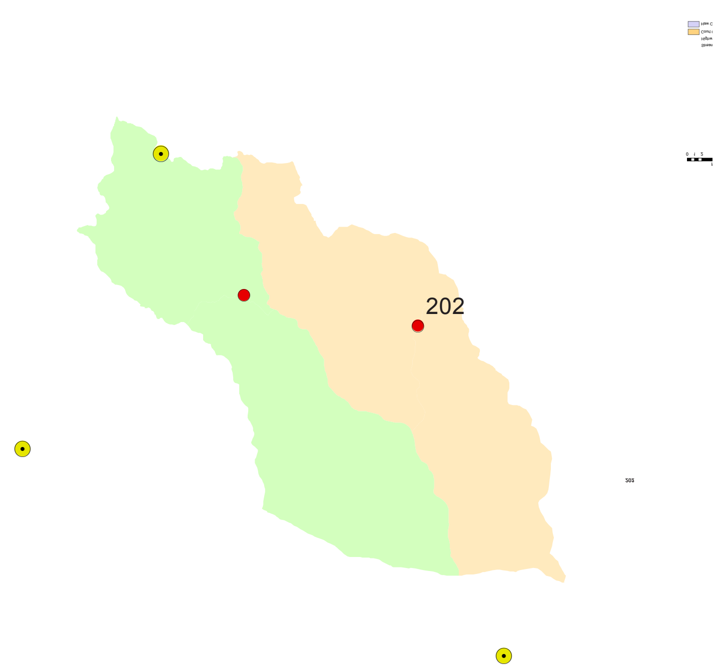


Figure 2-3. Location of monitoring stations in Panther and Cox Creek watersheds

Sediment Data

The daily streamflow and suspended sediment concentrations observed at all the five monitoring stations from Water Year 2000 to Water Year 2009 are given in Appendix B and C. Examples of the frequency of data collection are shown in figures 2-4 and 2-5 for the Court Creek Station. A summary of statistics for all stations showing the mean, medium, minimum maximum, 25^{th} percentile, and 75^{th} percentile are given in table 2-2. Over 17,890 samples have been collected and analyzed at the five monitoring stations since the monitoring program was initiated. As can be seen in the figures, suspended sediment concentrations are highly variable throughout a year and also from year to year depending on the climatic conditions. It is also evident that sediment concentrations are the highest during storm events resulting in the transport of most of the sediment during storm events. Therefore, it is extremely important that samples are collected frequently during storm events to accurately measure sediment loads at monitoring stations.

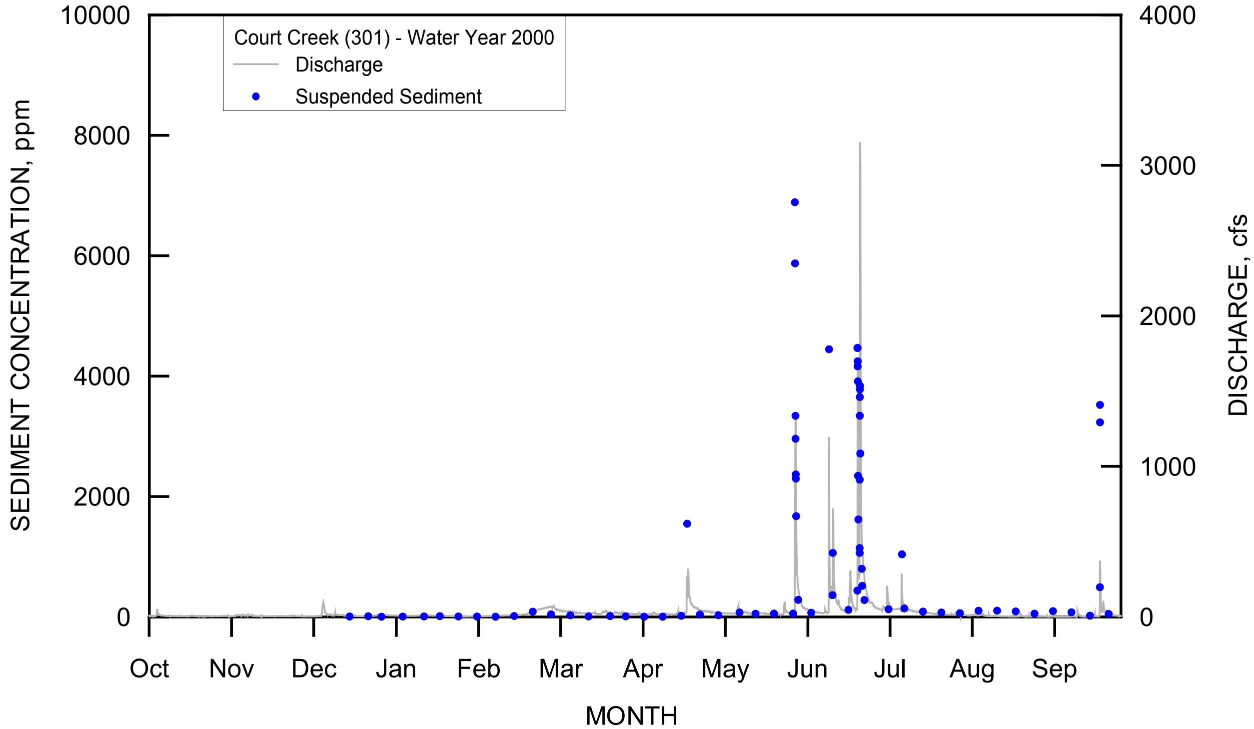
Nutrient Data

All the nutrient data collected and analyzed from Water Year 2000 through Water Year 2009 at the five monitoring stations are given in Appendices D and E. The nutrient data are organized into two groups: nitrogen species and phosphorous species. The nitrogen species include nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), ammonium-nitrogen (NH_4-N), and total Kjedahl nitrogen (TKN). The phosphorous species include total phosphorous (TP), total dissolved phosphorous (TDP), and orthophosphate (P-ortho). Over 10,059 samples have been collected and analyzed for nitrate (NO_3-N), ammonium (NH_4-N) and orthophosphate (P-ortho). In addition, more than 6,625 samples have been analyzed for nitrate (NO_2-N), total Kjeldahl nitrogen (TKN), total phosphorous (TP), and total dissolved phosphorous (TDP). Examples of the type of data collected for the nitrogen species are shown in figure 2-5, while those for the phosphorous species are shown in figure 2-6. A summary statistics for all stations showing the mean, median, minimum, maximum, 25^{th} percentile, and 75^{th} percentile are given in table 2-2.

Data for the nitrogen species at all five monitoring stations show that the dominant form of nitrogen transported by the streams is nitrate-N. During storm events, the concentration of TKN rises significantly, sometimes exceeding the nitrate-N concentration. TKN is highly correlated to suspended sediment concentrations.

One significant observation that can be made from the data is the consistently higher concentrations of nitrate-N at Panther Creek and Cox Creek (tributaries to the Sangamon River) than at Court Creek, North Creek, and Haw Creek (tributaries of the Spoon River).

Data for the phosphorous species at all five monitoring stations show that most of the phosphorous load is transported during storm events. Concentrations of total phosphorous are the highest during storm events and relatively low most of the time. This is very similar to that shown by sediment and thus implies high correlations between sediment and phosphorous concentrations and loads. In terms of phosphorous concentrations, it does not appear there is any significant difference between the different monitoring stations from the Spoon and Sangamon River watersheds.



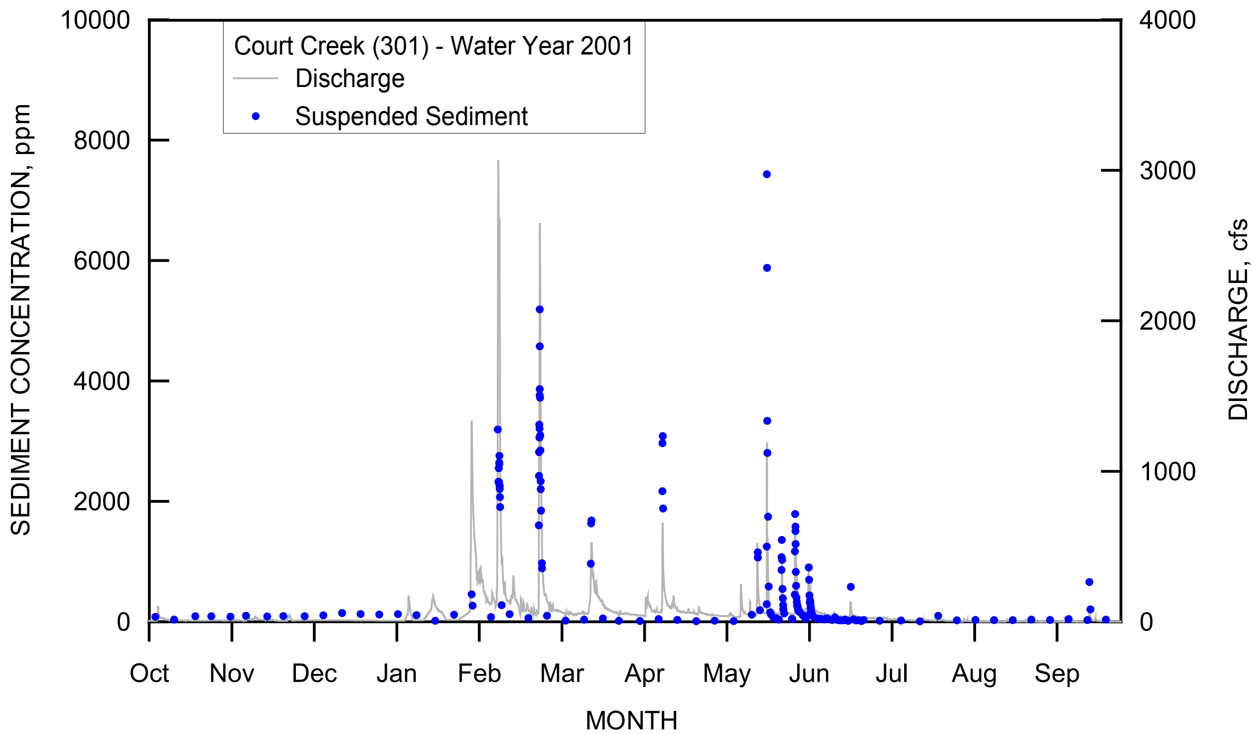
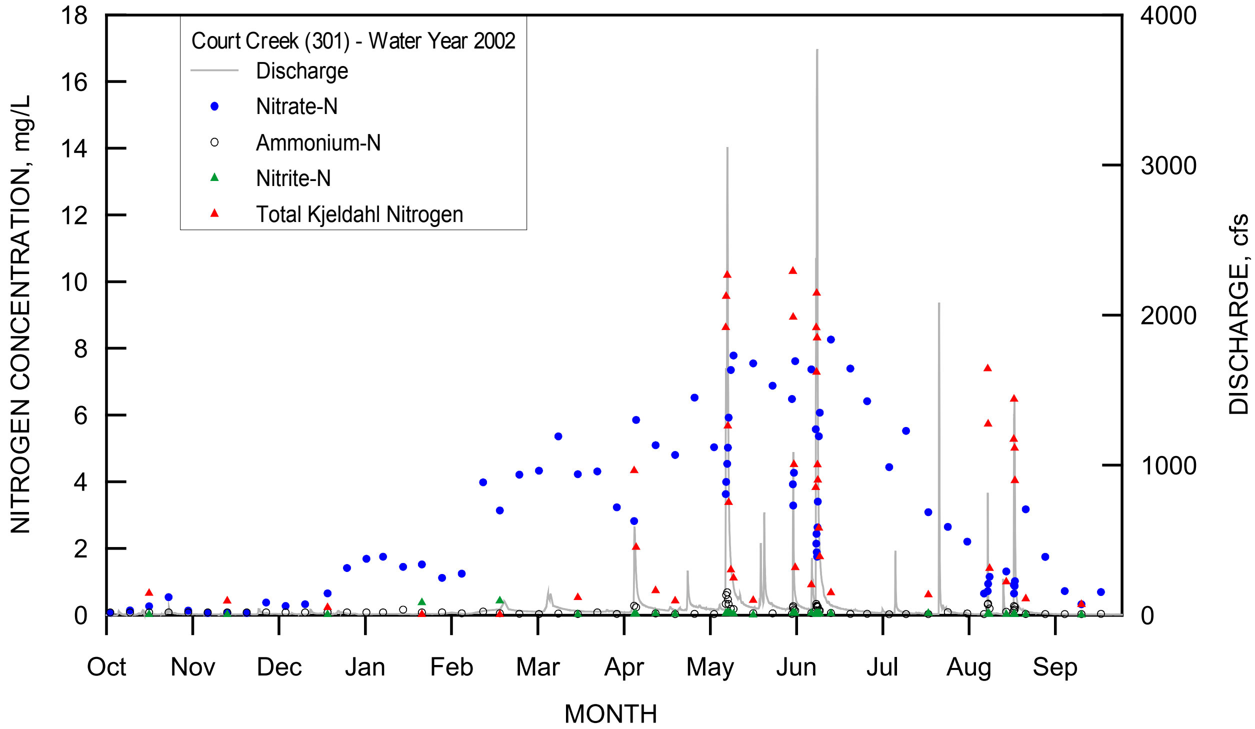


Figure 2-4. Suspended sediment concentrations and water discharge at Court Creek (301) for Water Years 2000 and 2001



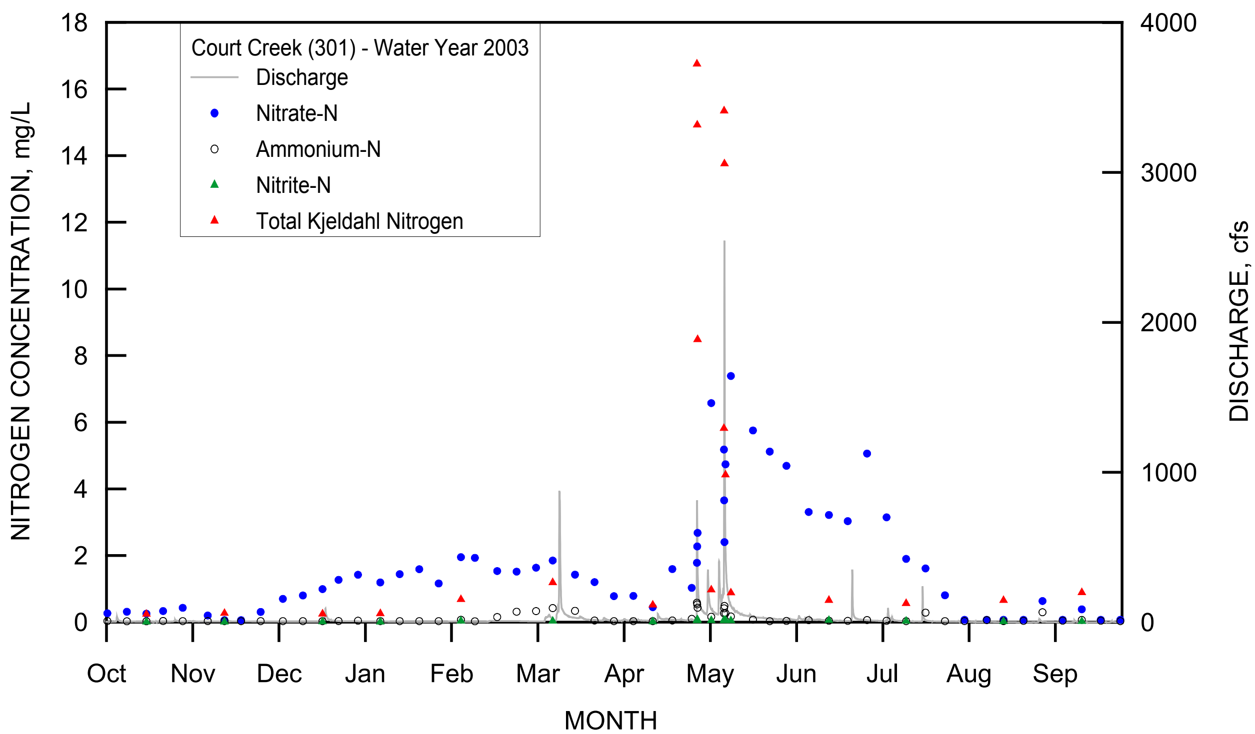
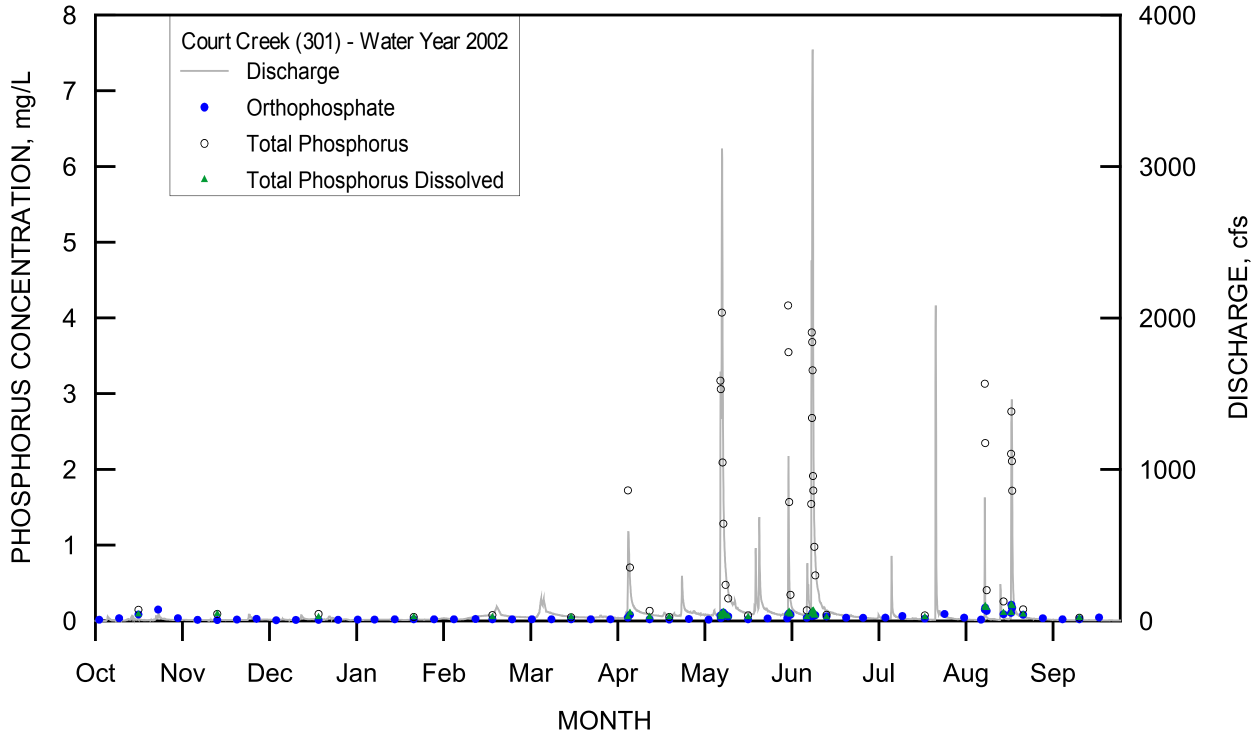


Figure 2-5. Concentrations of nitrogen species and water discharge at Court Creek (301) for Water Years 2002 and 2003

Table 2-2. Summary Statistics for Water Years 2000–2009. All concentrations in mg/L

	NO3-N	*oPO4-P*	*NH4-N*	*NO2-N*	*TKN*	*t-P*	*t-P-Dissolved*	*SSC*
Court Creek (Station 301)								
Count	704	704	704	370	369	369	369	3258
Mean	3.24	0.07	0.15	0.04	2.74	0.95	0.12	702
Median	3.14	0.04	0.08	0.03	1.43	0.41	0.09	120
Min	<0.06	<0.01	<0.03	<0.01	<0.23	<0.03	<0.03	1.93
Max	11.37	0.69	0.90	0.13	18.69	6.58	0.71	13632
25th Percentile	0.95	<0.03	<0.06	0.02	0.63	0.12	0.06	37.3
75th Percentile	5.05	0.08	0.18	0.05	3.88	1.38	0.14	612
North Creek (Station 302)								
Count	699	699	699	365	365	365	365	4069
Mean	3.41	0.08	0.15	0.04	2.47	0.85	0.13	469
Median	3.32	0.04	0.07	0.03	1.18	0.34	0.09	76.8
Min	<0.06	<0.01	<0.03	<0.01	<0.23	<0.04	<0.03	0.36
Max	12.66	0.90	1.55	0.19	17.95	6.69	0.90	14565
25th Percentile	0.84	0.02	<0.06	0.02	0.64	0.11	0.06	27.5
75th Percentile	5.45	0.09	0.16	0.05	3.07	1.07	0.15	256
Haw Creek (Station 303)								
Count	708	708	708	371	371	371	371	3995
Mean	4.64	0.08	0.13	0.05	2.55	0.86	0.12	574
Median	4.67	0.06	0.07	0.04	1.51	0.42	0.10	158
Min	<0.06	<0.01	<0.03	<0.01	<0.23	<0.04	<0.03	2.17
Max	12.59	0.71	1.07	0.21	16.75	5.92	0.95	9879
25th Percentile	1.89	0.04	<0.06	0.03	0.65	0.14	0.07	47.0
75th Percentile	7.03	0.09	0.15	0.06	3.23	1.13	0.13	591
Panther Creek (Station 201)								
Count	620	620	620	276	276	276	276	3658
Mean	4.40	0.12	0.10	0.03	2.52	1.11	0.19	850
Median	3.88	0.07	0.06	0.03	0.84	0.28	0.13	102.6
Min	<0.06	<0.01	<0.03	<0.01	<0.12	<0.03	<0.03	1.47
Max	14.76	1.31	1.27	0.19	23.99	11.21	1.38	48289
25th Percentile	0.16	0.04	<0.06	<0.02	0.46	0.12	0.08	40.4
75th Percentile	7.71	0.14	0.08	0.04	3.48	1.48	0.21	385
Cox Creek (Station 202)								
Count	622	622	622	275	275	275	275	2910
Mean	6.05	0.17	0.31	0.05	2.93	1.15	0.28	737
Median	5.97	0.09	0.07	0.04	1.37	0.40	0.16	130
Min	<0.06	<0.01	<0.03	<0.01	<0.14	<0.04	<0.03	0.95
Max	18.14	2.70	12.83	0.29	18.25	7.90	2.95	22066
25th Percentile	0.89	0.05	<0.06	0.02	0.55	0.16	0.09	57.3
75th Percentile	10.50	0.19	0.17	0.06	3.55	1.48	0.38	376



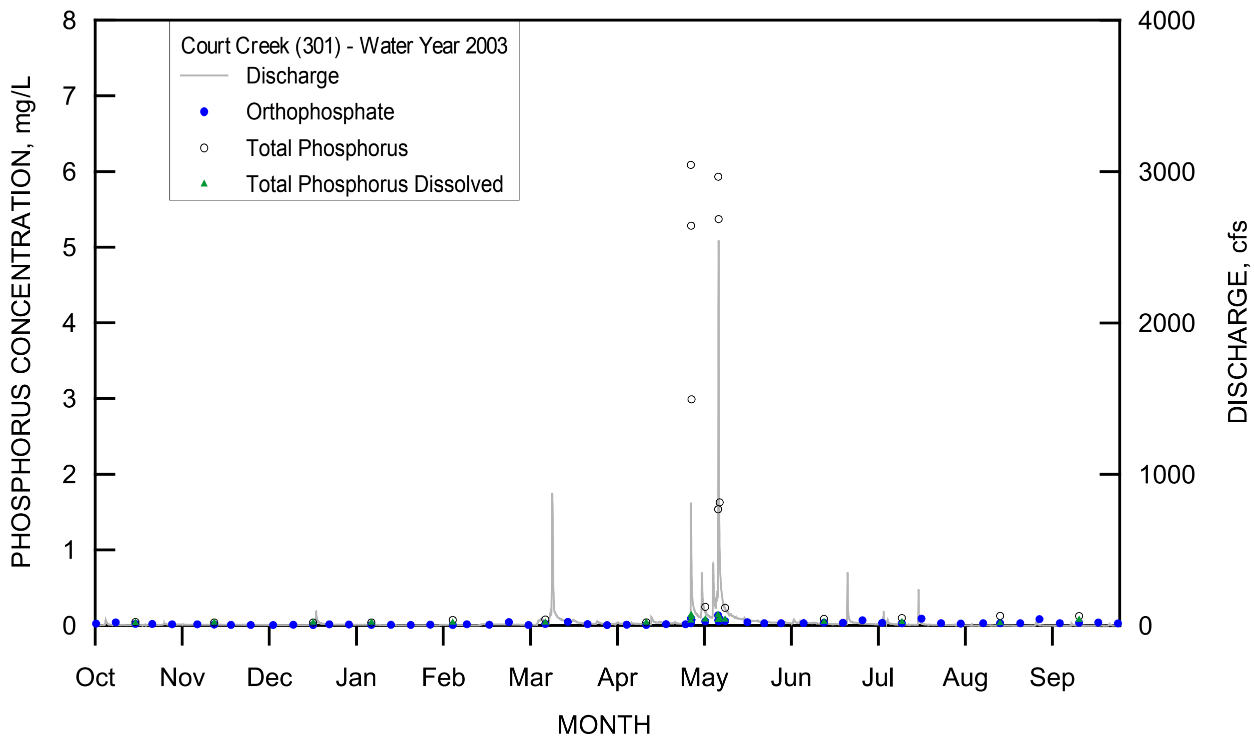


Figure 2-6. Concentrations of phosphorous species and water discharge at Court Creek (301) for Water Years 2002 and 2003

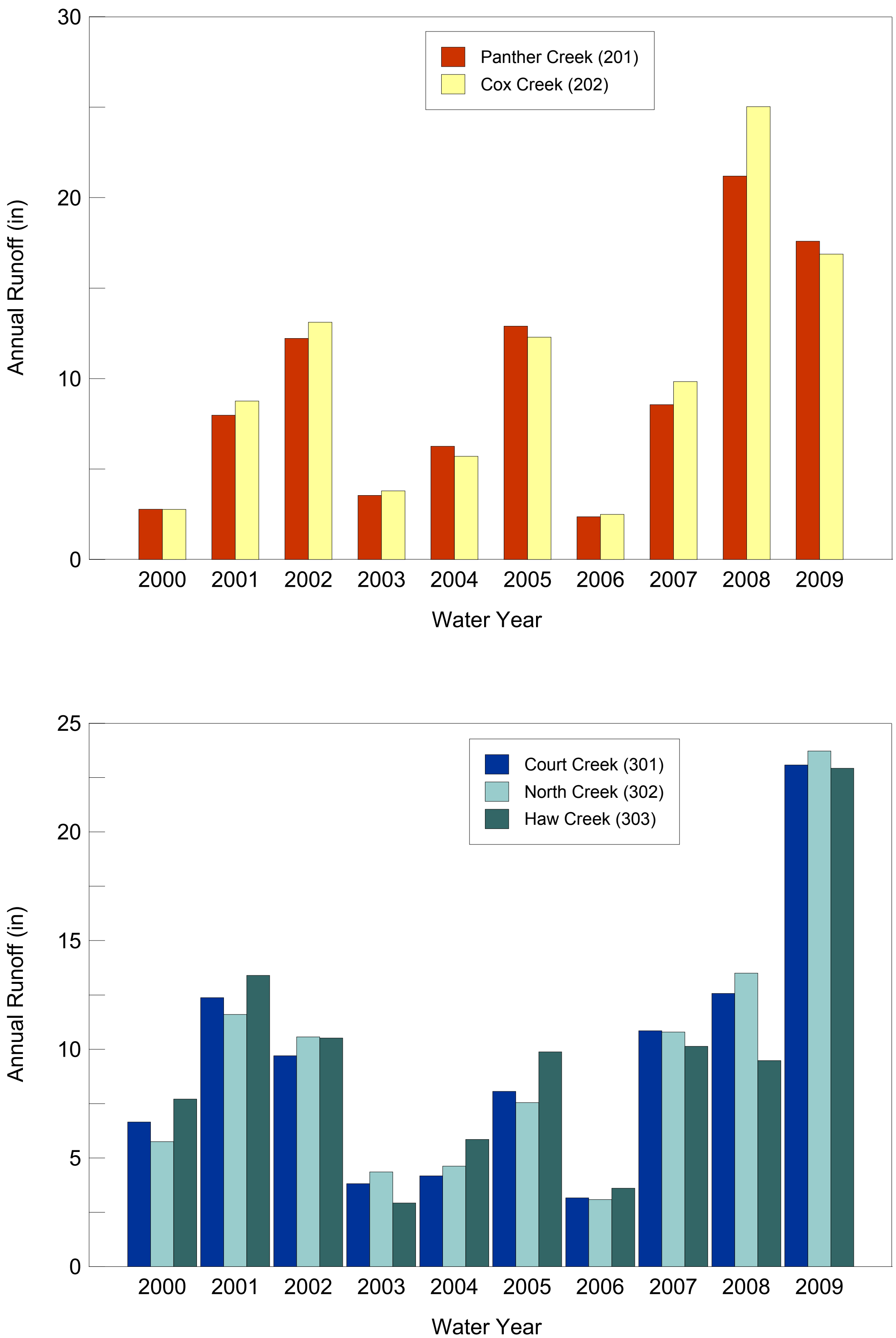


Figure 2-7. Annual runoff at the five CREP monitoring stations

Sediment and Nutrient Loads

The sediment and nutrient concentrations and water discharges are used to compute the amount of sediment and nutrient transported past monitoring stations. Based on the available flow and concentration data, daily loads are computed for sediment and the different species of nitrogen and phosphorous. The daily loads are then compiled to compute monthly and annual loads. Results of those calculations are summarized in tables 2-3 to 2-7 for each of the five monitoring stations. Each table presents the annual water discharge, sediment load, nitrate-N load, and the total phosphorous load for one of the stations. Similar calculations have been made for the other species of nitrogen and phosphorous, but are not included in the summary tables. The annual sediment loads are highly correlated to the water discharge, and thus the wetter years, 2001, 2002, 2007, 2008, and 2009 generated more sediment at all stations as compared to drier years, 2000, 2003, and 2006. The annual sediment loads ranged from a low of 1,827 tons in 2003 at Cox Creek to a high of 174,742 tons in 2009 at Court Creek. The nitrate-N loads ranged from a low of 10.3 tons in 2000 at Cox Creek to a high of 506 tons in 2009 at Haw Creek. The total phosphorous loads ranged from a low of 1.6 tons in 2006 at Cox Creek to a high of 116.9 tons in 2009 at Court Creek. For comparison purposes, the runoff, sediment, nitrate-N, nitrite-N, ammonium-N, Kjeldahl-N, total phosphorous, dissolved phosphorous, and ortho-phosphate phosphorous loads phosphorous loads (for the five monitoring stations) are shown in figures 2-8 to 2-15. In terms of the total annual loads, the larger watersheds, Court and Haw, consistently carry higher sediment and nutrient loads than Panther and Cox Creeks. However, per unit area Panther and Cox generate more sediment than Court, North, and Haw Creeks.

Table 2-3. Summary of Annual Water Discharges, Sediment and Nutrient Loads at Court Creek Monitoring Station (301)

		Load		
Water Year	*Water discharge (cfs)*	*Sediment (tons)*	*Nitrate-N (tons)*	*Total phosphorus (tons)*
2000	11,880	26,527	131.2	35.0
2001	22,100	43,633	274.8	39.2
2002	17,320	62,898	203.7	47.9
2003	6,805	21,749	59.9	18.3
2004	7,459	7,359	76.0	7.5
2005	14,400	18,831	207.5	20.4
2006	5,650	7,897	84.3	6.5
2007	19,376	48,974	240.8	46.8
2008	22,442	41,077	265.4	45.6
2009	41,207	174,742	429.6	116.9

Table 2-4. Summary of Annual Water Discharges, Sediment and Nutrient Loads at North Creek Monitoring Station (302)

		Load		
Water Year	*Water discharge (cfs)*	*Sediment (tons)*	*Nitrate-N (tons)*	*Total phosphorus (tons)*
2000	4,009	6,969	42.8	10.4
2001	8,091	16,747	102.9	12.7
2002	7,372	29,269	97.8	24.2
2003	3,039	11,422	32.9	9.1
2004	3,224	2,038	37.7	2.4
2005	5,266	6,061	76.3	7.7
2006	2,151	4,179	36.2	3.4
2007	7,524	16,702	99.3	14.3
2008	9,416	19,762	119.0	21.0
2009	16,544	62,806	167.9	45.2

Table 2-5. Summary of Annual Water Discharges, Sediment and Nutrient Loads at Haw Creek Monitoring Station (303)

		Load		
Water Year	*Water discharge (cfs)*	*Sediment (tons)*	*Nitrate-N (tons)*	*Total phosphorus (tons)*
2000	11,433	21,283	162.2	32.0
2001	19,878	49,580	322.0	58.0
2002	15,603	44,221	256.5	42.8
2003	4,337	5,908	41.7	8.3
2004	8,676	10,914	143.4	12.6
2005	14,661	18,047	281.4	18.5
2006	5,341	5,770	113.7	6.0
2007	15,032	20,127	262.5	23.9
2008	14,054	16,396	227.0	25.5
2009	34,003	10,4081	506.4	85.9

Table 2-6. Summary of Annual Water Discharges, Sediment and Nutrient Loads at Panther Creek Monitoring Station (201)

		Load		
Water Year	*Water discharge (cfs)*	*Sediment (tons)*	*Nitrate-N (tons)*	*Total phosphorus (tons)*
2000	1,236	4,342	13.8	4.4
2001	3,550	9,839	84.9	5.1
2002	5,440	34,596	101.8	16.4
2003	1,578	2,955	26.4	1.8
2004	2,787	7,820	52.5	5.8
2005	5,743	13,793	112.2	10.2
2006	1,053	2,694	22.5	2.5
2007	3,809	13,410	75.4	10.6
2008	9,437	83,924	123.1	46.7
2009	7,833	30,921	117.7	13.9

Table 2-7. Summary of Annual Water Discharges, Sediment and Nutrient Loads at Cox Creek Monitoring Station (202)

		Load		
Water Year	*Water discharge (cfs)*	*Sediment (tons)*	*Nitrate-N (tons)*	*Total phosphorus (tons)*
2000	894	4153	10.3	5.7
2001	2,833	9626	77.9	5.5
2002	4,242	23207	100.6	16.1
2003	1,226	1827	29.6	1.7
2004	1,844	4597	45.3	3.7
2005	3,976	8132	109.0	8.8
2006	806	3662	19.3	1.6
2007	3,181	10105	81.5	7.2
2008	8,097	73678	154.7	31.4
2009	5,459	16331	135.9	8.6

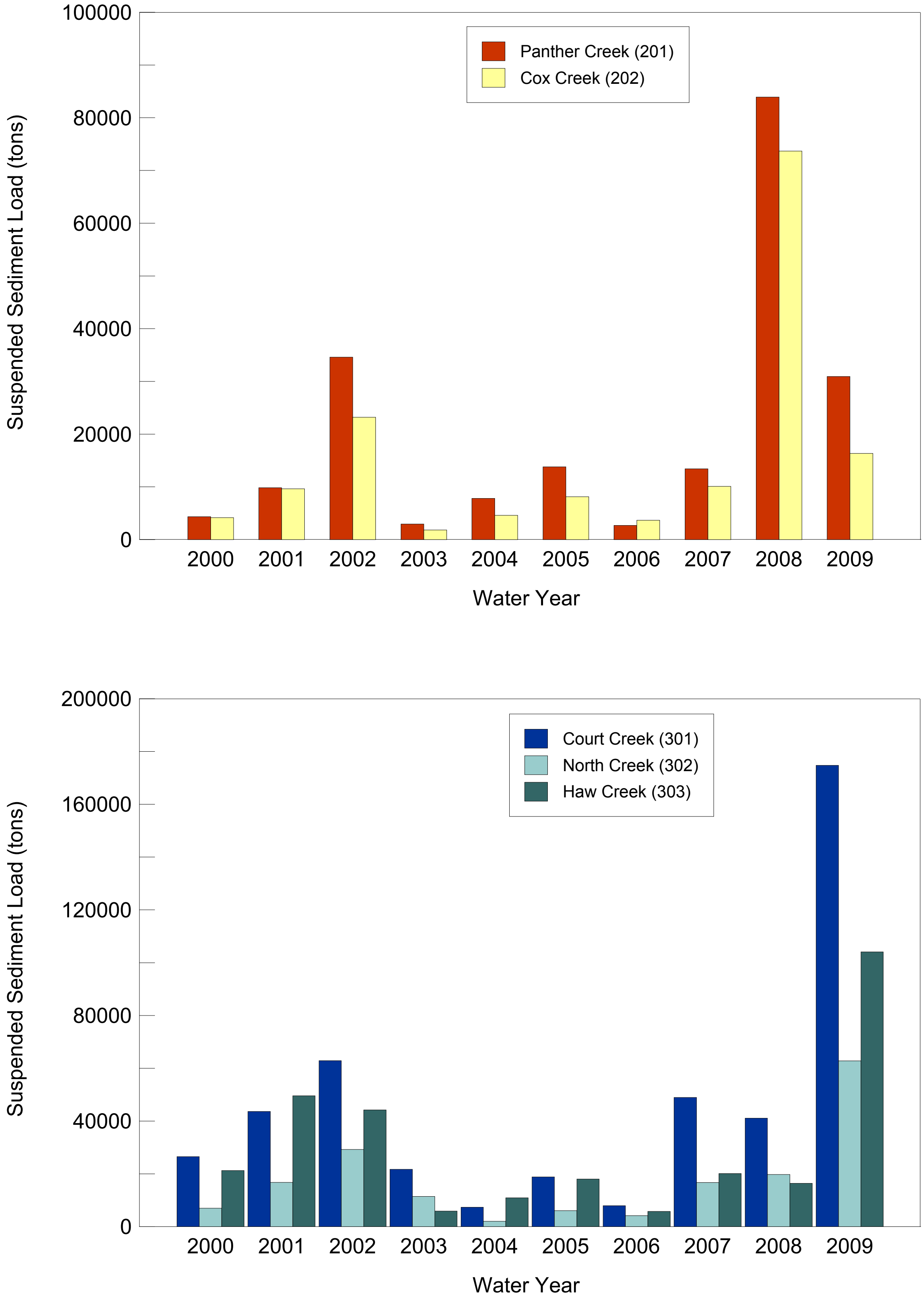
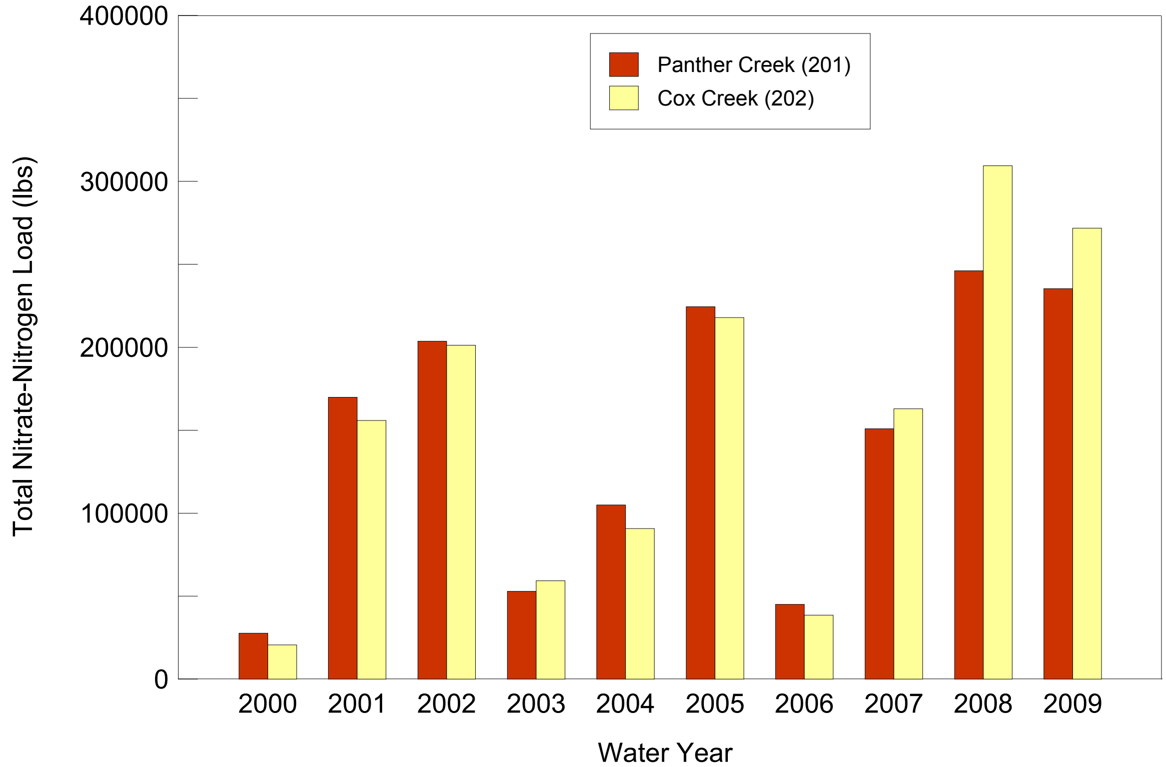


Figure 2-8. Annual suspended sediment loads at the five CREP monitoring stations



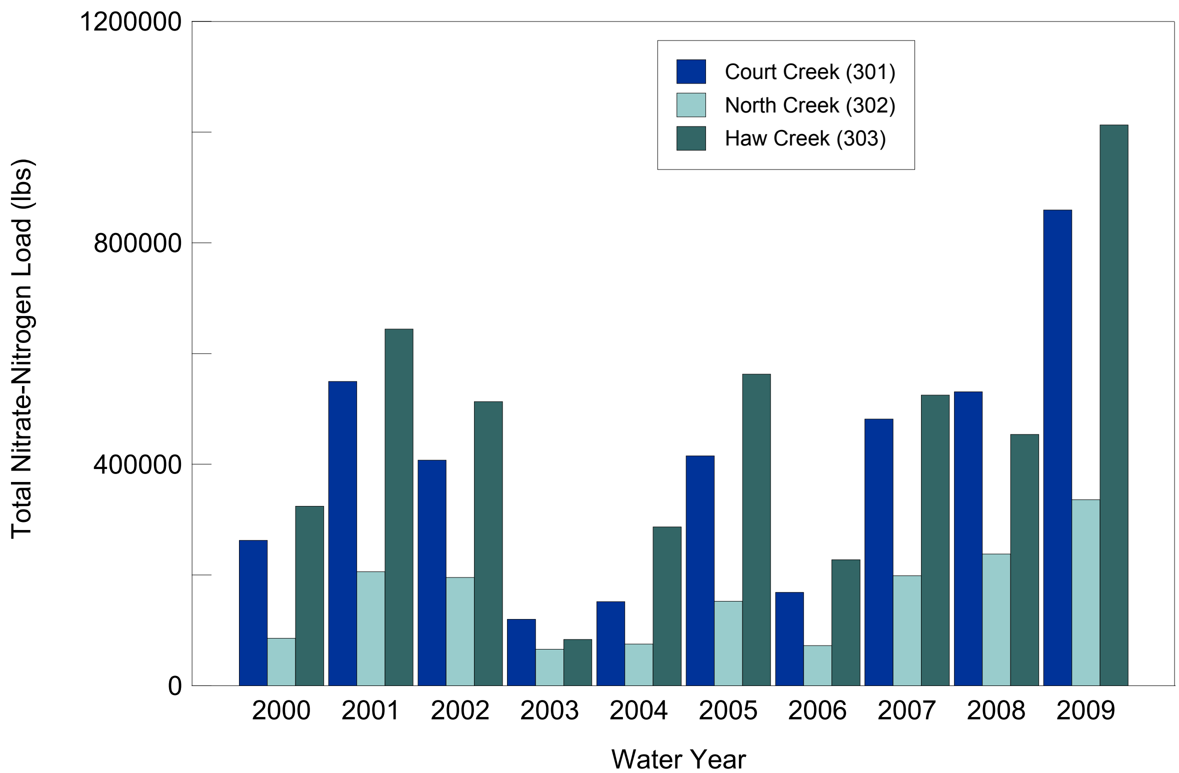
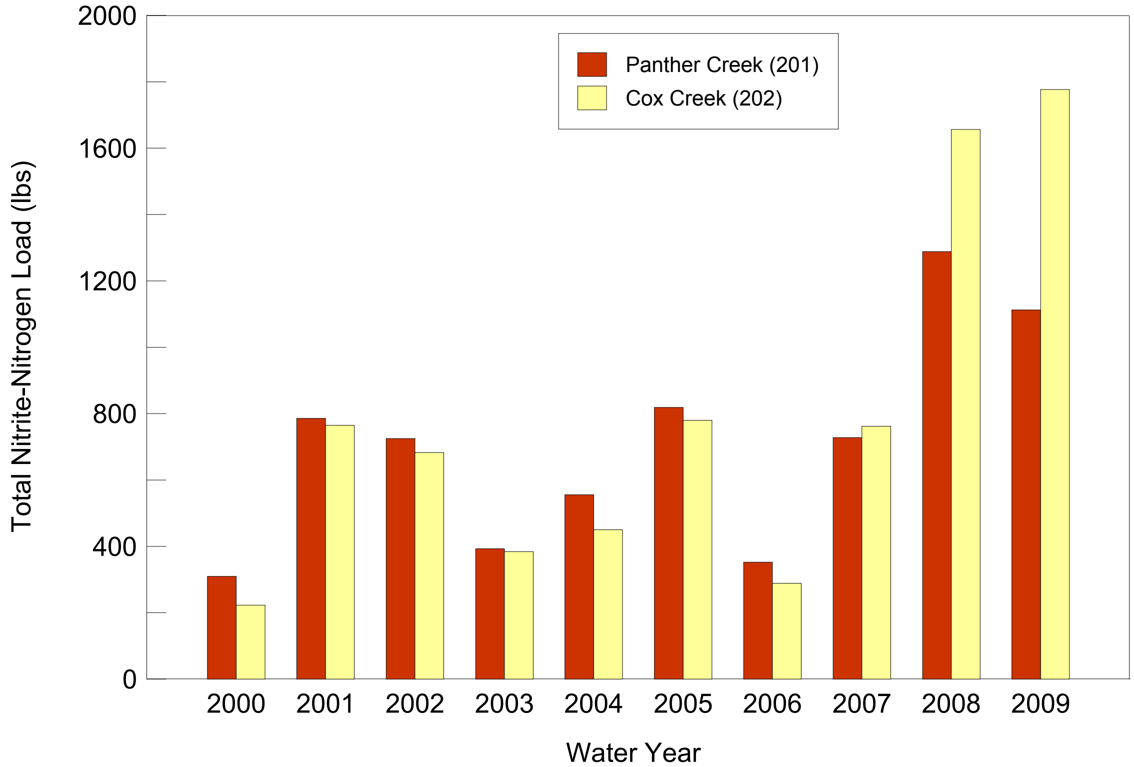


Figure 2-9. Annual nitrate-N loads at the five CREP monitoring stations



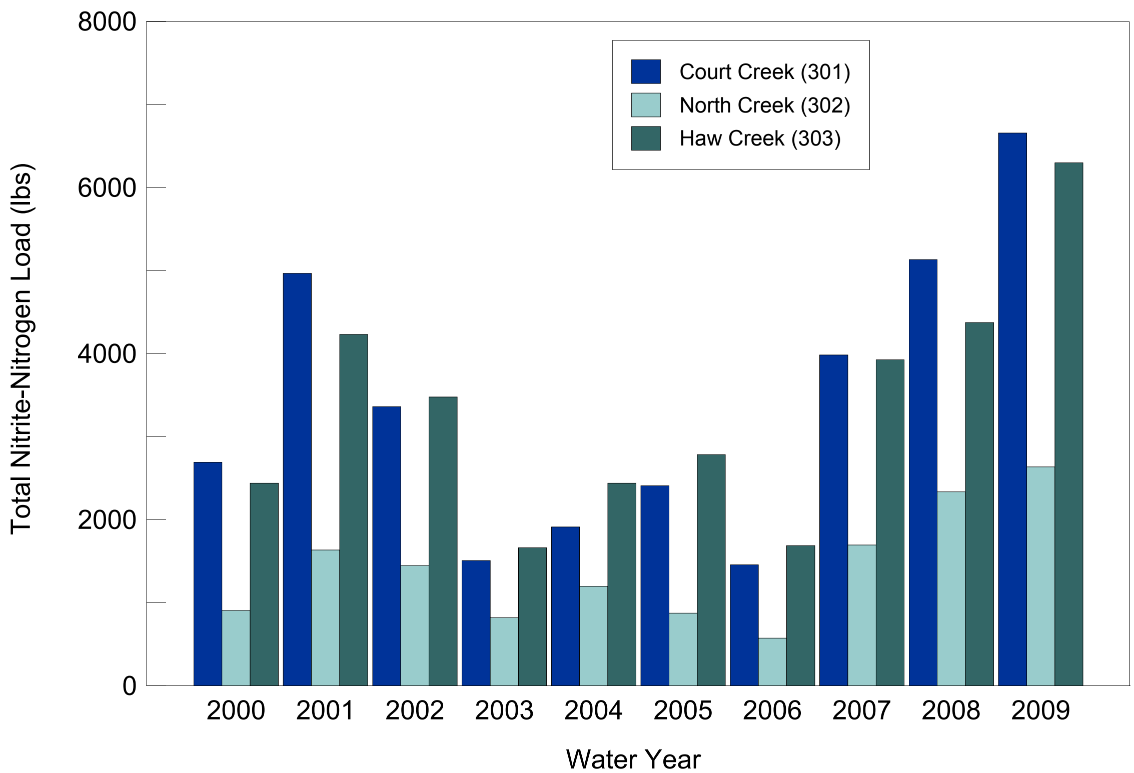


Figure 2-10. Annual nitrate-N loads at the five CREP monitoring stations

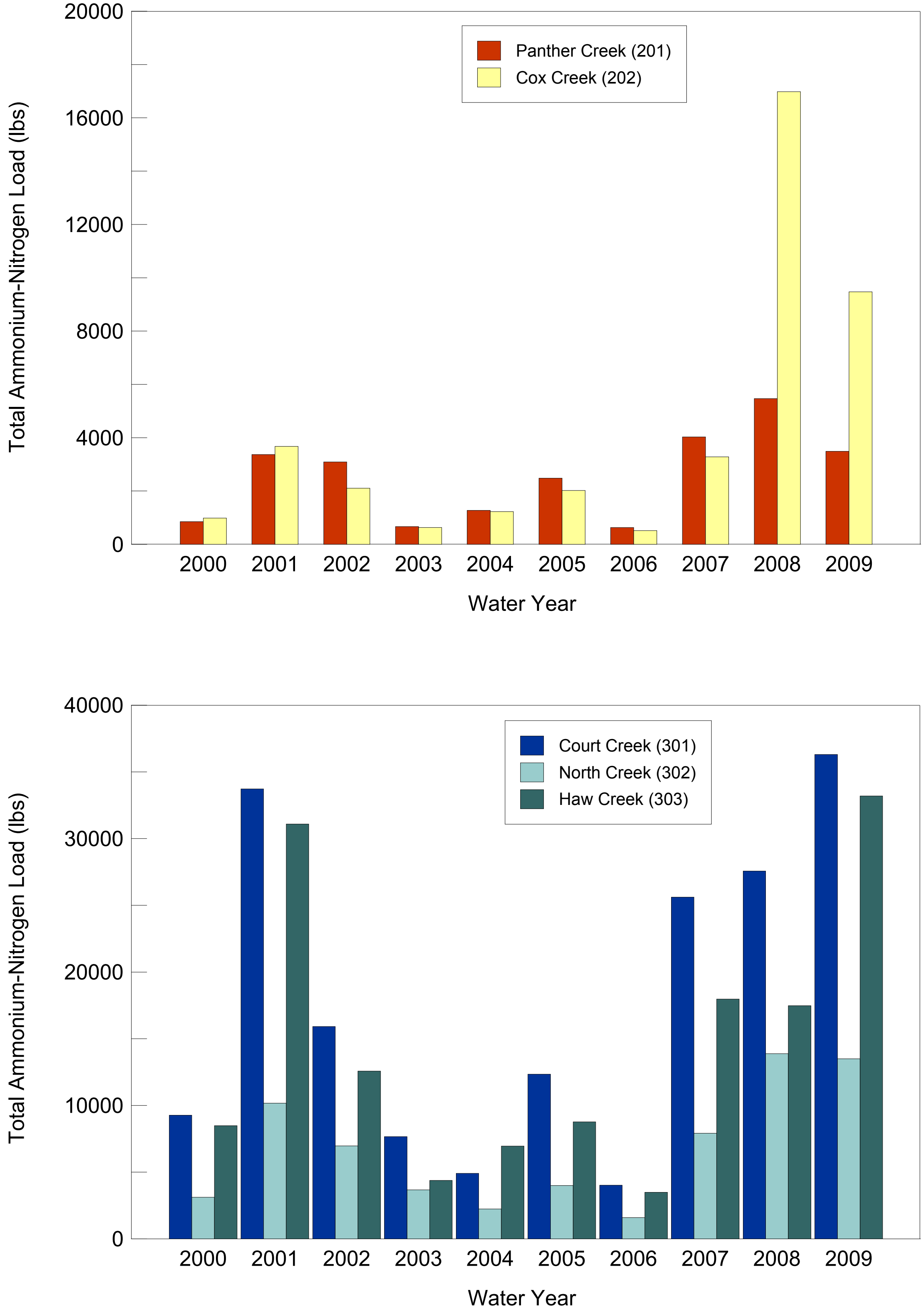


Figure 2-11. Annual ammonium-N loads at the five CREP monitoring stations

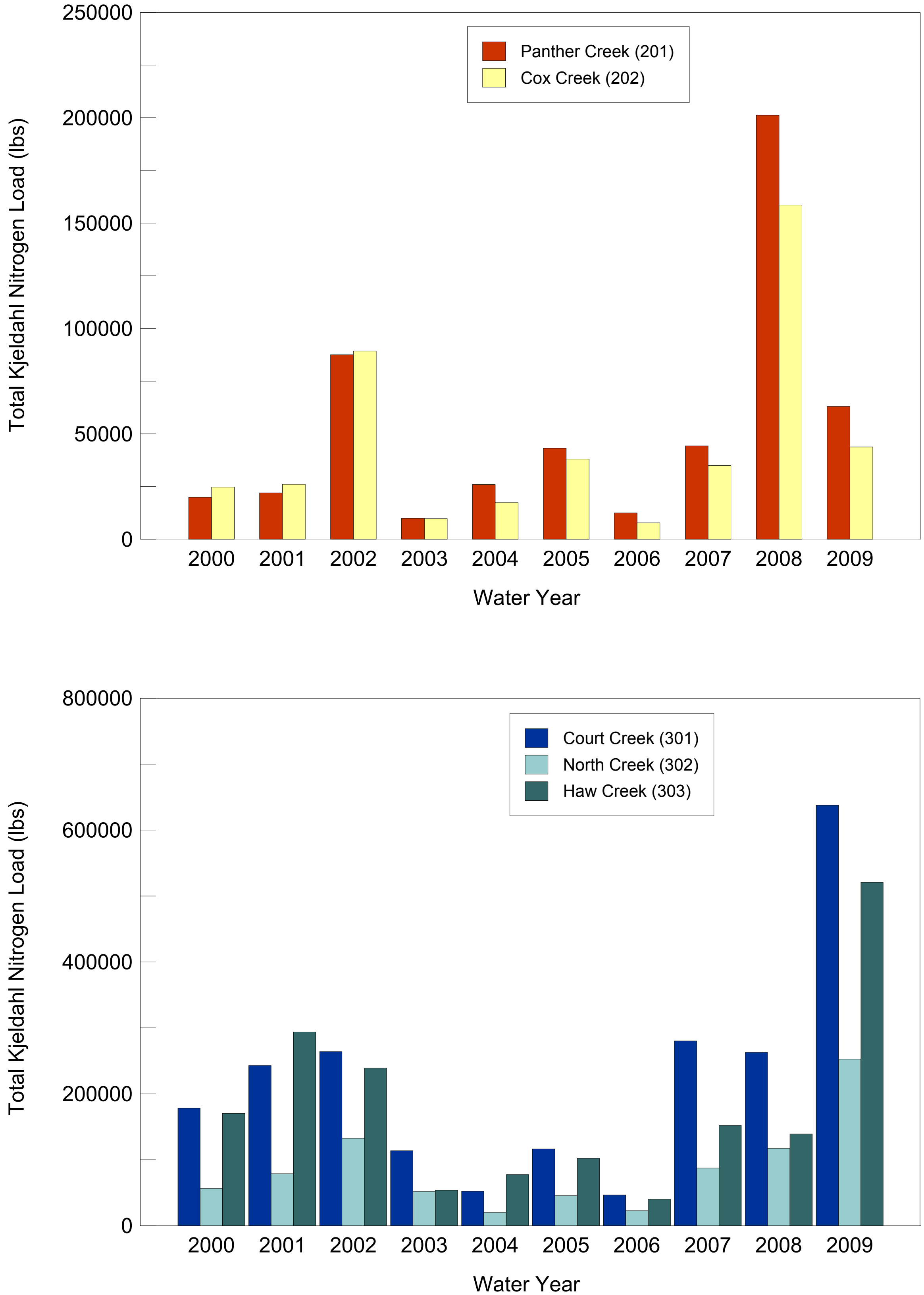


Figure 2-12. Annual Kjeldahl nitrogen loads at the five CREP monitoring stations

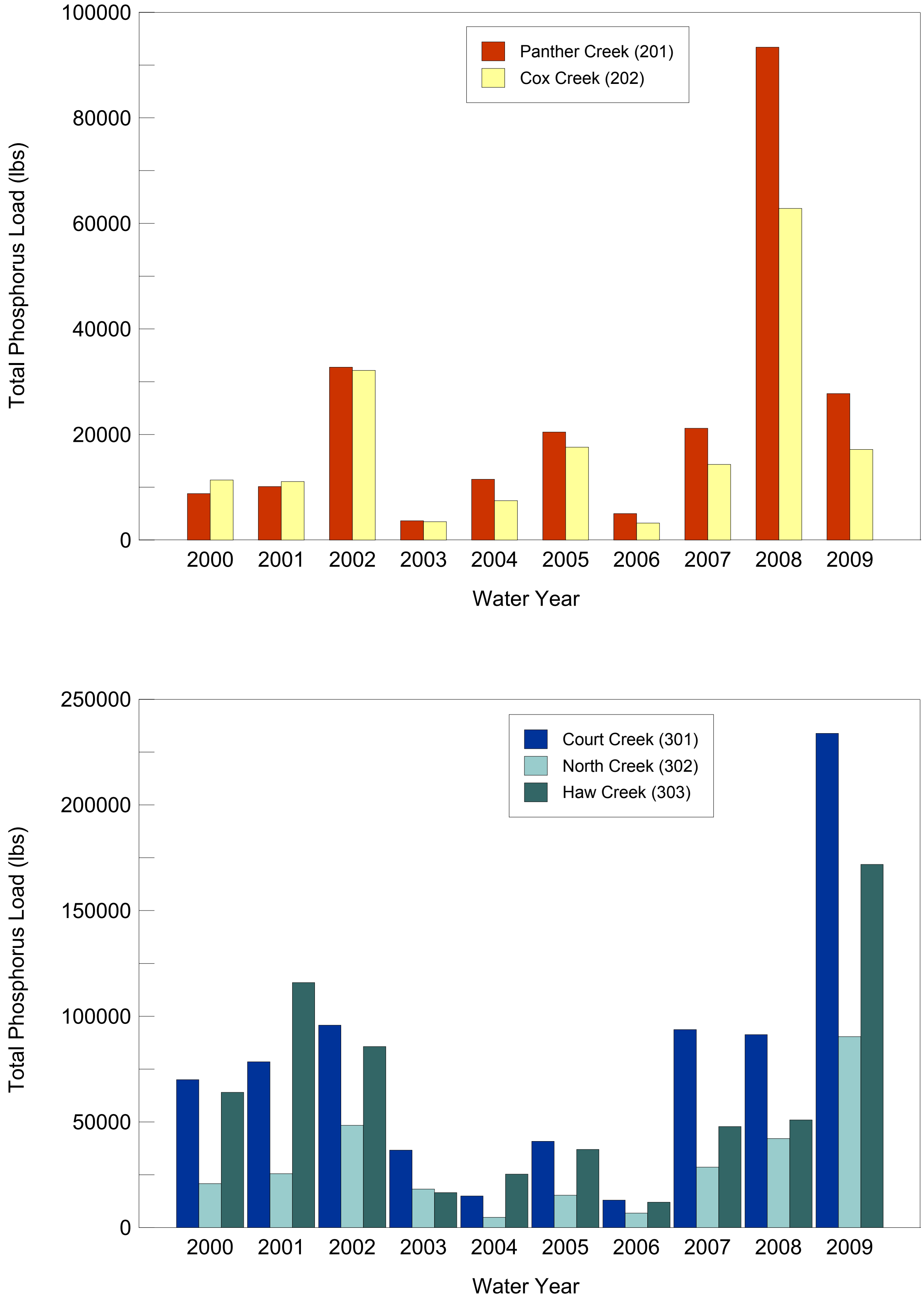


Figure 2-13. Annual phosphorus loads at the five CREP monitoring stations

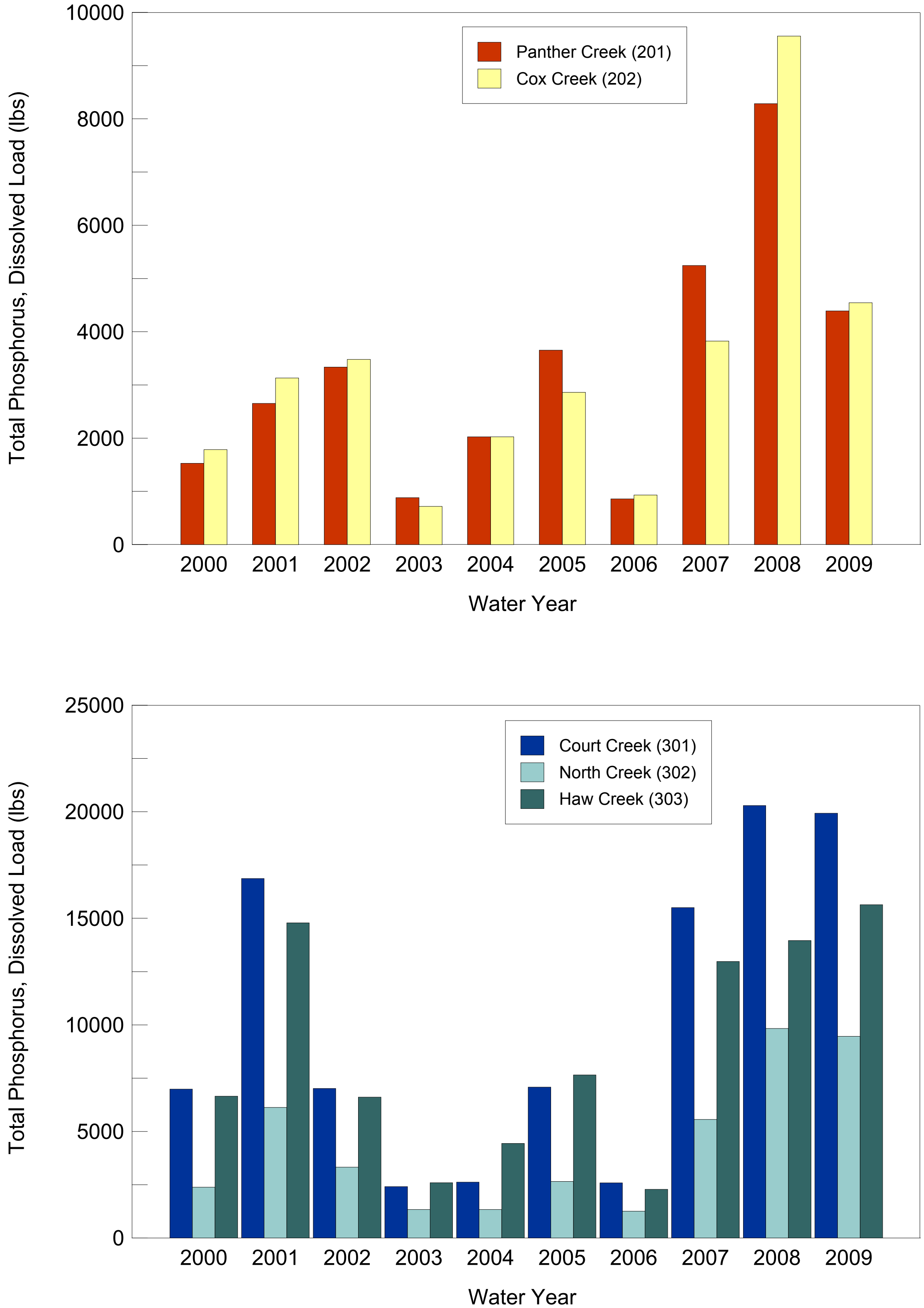
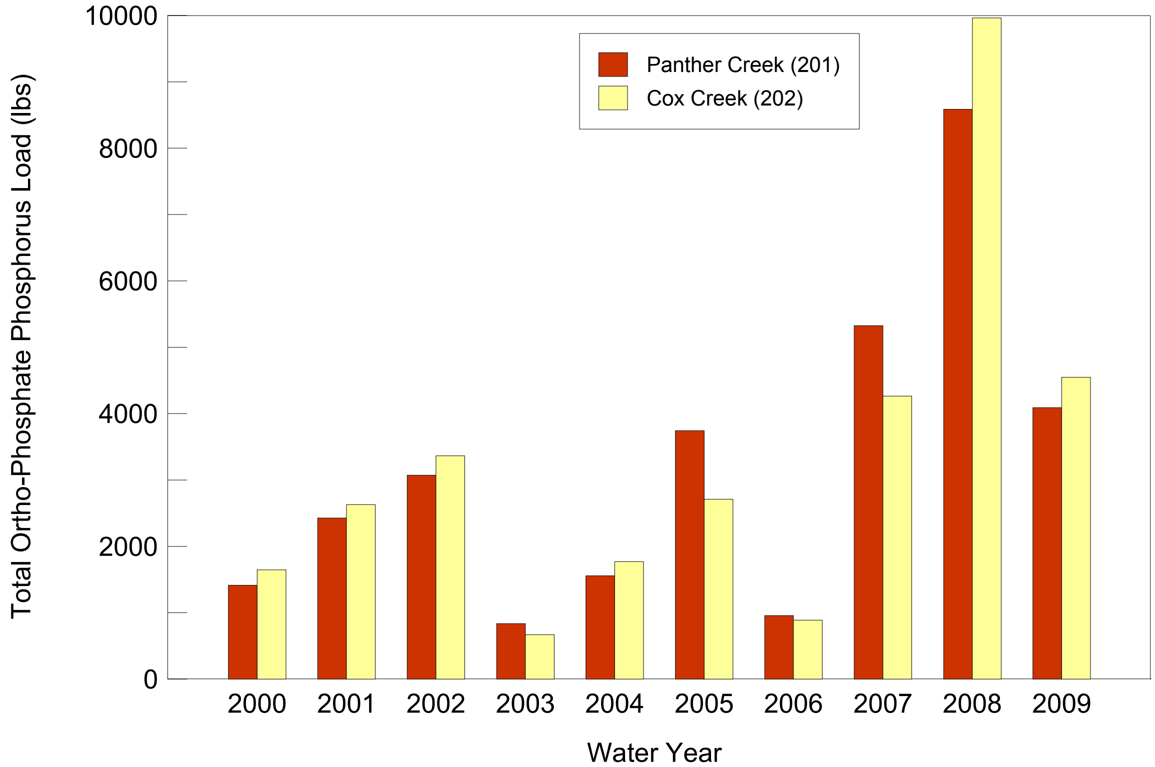


Figure 2-14. Annual dissolved phosphorus loads at the five CREP monitoring stations



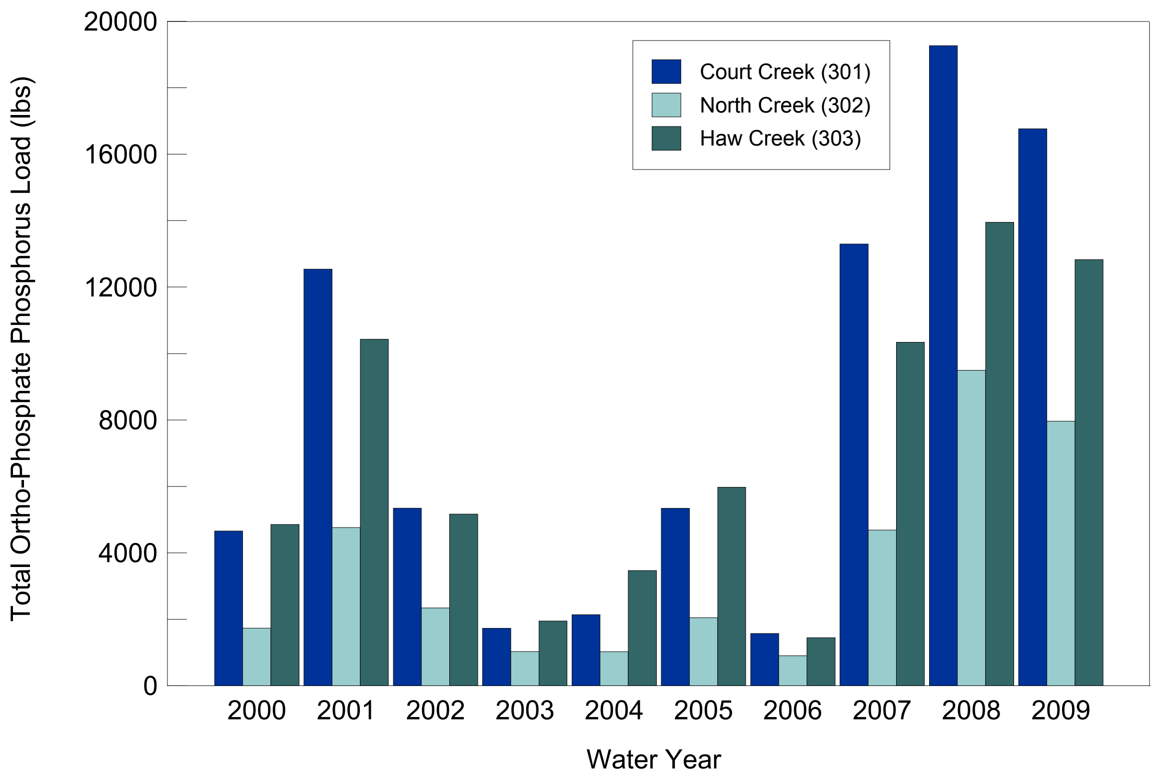


Figure 2-15. Annual ortho-phosphate phosphorous loads at the five CREP monitoring stations

Sediment and Nutrient Yields

To compare the different watersheds in terms of the amount of sediment and nutrient generated per unit area from each of the watersheds, the annual sediment and nutrient yields were computed by dividing the total annual load with the drainage area in acres for each of the monitoring stations. The results are provided in table 2-8 for sediment yield, table 2-9 for nitrate-N yield, and table 2-10 for total phosphorous. Sediment yields range from a low of 0.12 tons/acre for station 302 in 2004 to a high of 9.57 tons/acre for station 202 in 2008. Because of the high level of variability from year to year the average sediment yield for the nine years of data collection are compared in figure 2-16. The stations are arranged in order of their drainage area, with the station with the smallest drainage area (202) on the left and the station with the largest area (301 on the right. As can be seen in the figure, on the average the stations with the smaller drainage areas (202 and 201) yield higher sediment (over 1.5 ton/acre) than the stations with the larger areas (302, 303, 301) that yield less than 0.7 tons/acre.

Nitrate-N yields vary from a low of 2.6 lbs/acre for station 201 in 2000 to a high of 40.2 lbs/acre for station 202 in 2008. For comparison purposes the average annual nitrate-N yield for the five stations is shown in figure 2-17. In general the stations with smaller drainage areas generate more nitrate per unit area than those with larger drainage areas, except for station 303 that is generating similar amounts as station 201 that has a smaller area.

Total phosphorous yields vary from a low of 0.29 lbs/acre for station 302 in 2004 to a high of 8.81 lbs/acre for station 201 in 2008. For comparison purposes, the average annual total phosphorous yield for the five stations is shown in figure 2-18. Similar to the nitrate-N yield, the stations with the smaller drainage areas generate more total phosphorous per unit area than those with larger drainage areas.

Table 2-8. Sediment Yield in tons/acre for the CREP Monitoring Stations

	CREP sediment yield (tons/ac)				
Water Year	*201*	*202*	*301*	*302*	*303*
2000	0.41	0.54	0.62	0.42	0.60
2001	0.93	1.25	1.03	1.01	1.40
2002	3.26	3.01	1.48	1.76	1.25
2003	0.28	0.24	0.51	0.69	0.17
2004	0.74	0.60	0.17	0.12	0.31
2005	1.30	1.06	0.44	0.37	0.51
2006	0.25	0.48	0.19	0.25	0.16
2007	1.27	1.31	1.15	1.01	0.57
2008	7.92	9.57	0.97	1.19	0.46
2009	2.92	2.12	4.11	3.78	2.95

Table 2-9. Nitrate-N Yield in lbs/acre for the CREP Monitoring Stations

	CREP nitrate-nitrogen yield (lbs/ac)				
Water Year	*201*	*202*	*301*	*302*	*303*
2000	2.6	2.7	6.2	5.2	9.2
2001	16.0	20.2	12.9	12.4	18.2
2002	19.2	26.1	9.6	11.8	14.5
2003	5.0	7.7	2.8	4.0	2.4
2004	9.9	11.8	3.6	4.5	8.1
2005	21.2	28.3	9.8	9.2	15.9
2006	4.2	5.0	4.0	4.4	6.4
2007	14.2	21.2	11.3	12.0	14.9
2008	23.2	40.2	12.5	14.3	12.9
2009	22.2	35.3	20.2	20.2	28.7

Table 2-10. Total Phosphorus Yield in lbs/acre for the CREP Monitoring Stations

	CREP total phosphorus yield (lbs/ac)				
Water Year	*201*	*202*	*301*	*302*	*303*
2000	0.83	1.48	1.65	1.25	1.81
2001	0.95	1.44	1.84	1.53	3.28
2002	3.09	4.17	2.25	2.92	2.43
2003	0.34	0.45	0.86	1.10	0.47
2004	1.09	0.97	0.35	0.29	0.72
2005	1.93	2.28	0.96	0.92	1.05
2006	0.47	0.42	0.31	0.41	0.34
2007	2.00	1.86	2.20	1.72	1.35
2008	8.81	8.16	2.15	2.53	1.44
2009	2.62	2.23	5.50	5.45	4.87

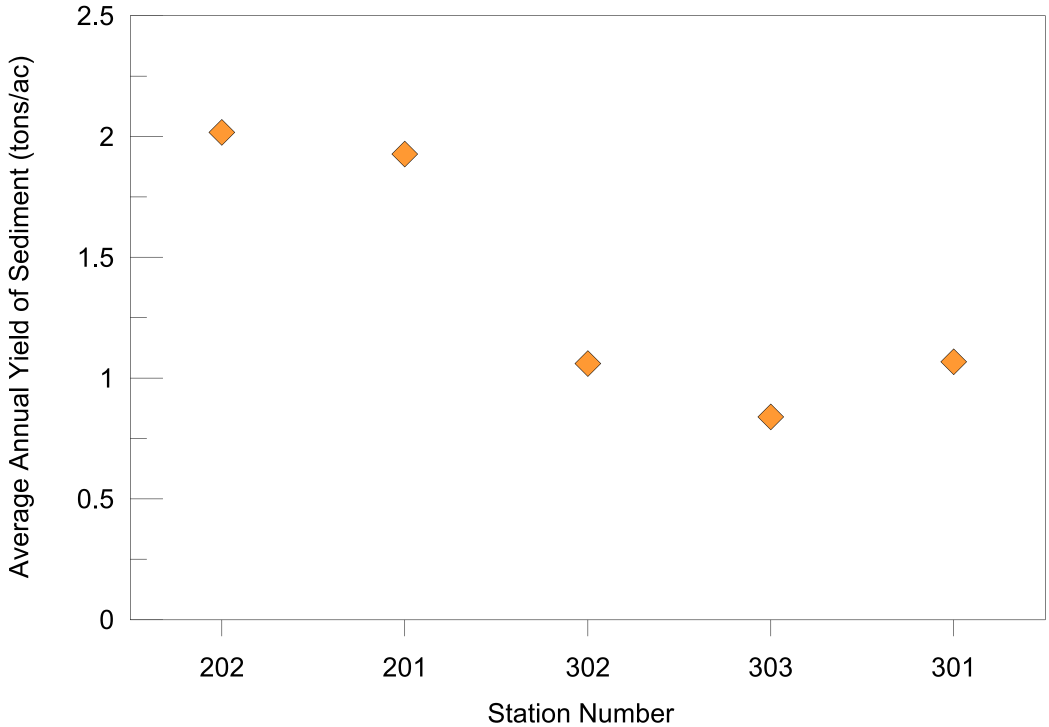


Figure 2-16. Average annual sediment yield in tons/acre for the CREP monitoring stations

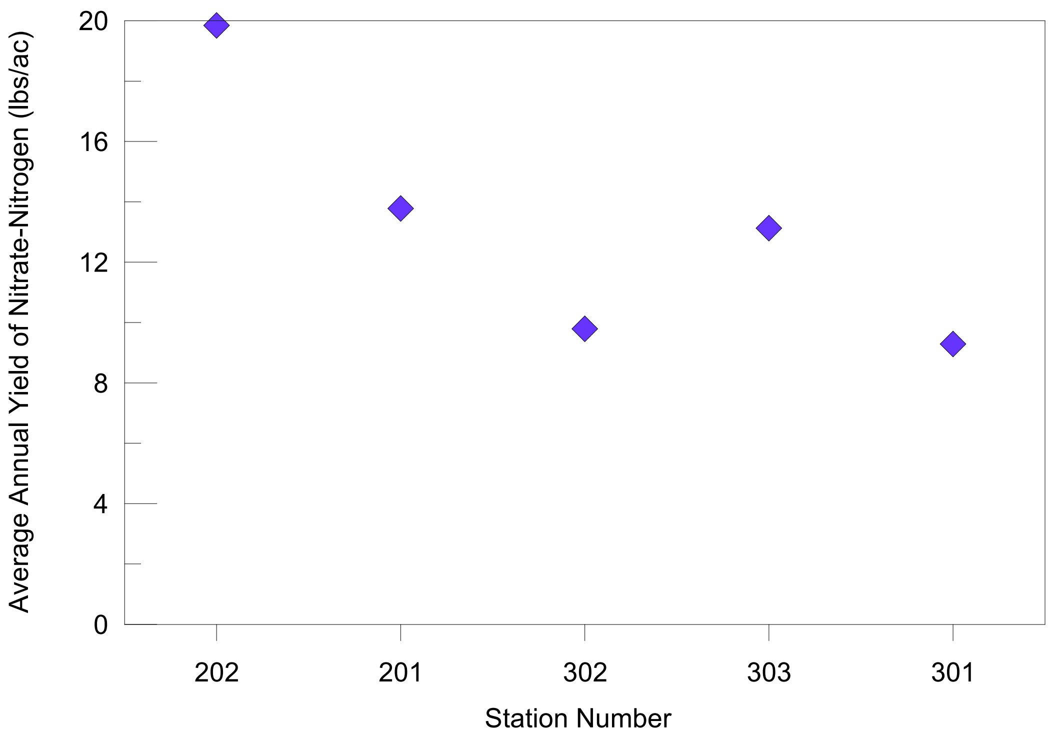


Figure 2-17. Average annual nitrate-N yield in lbs/acre for the CREP monitoring stations

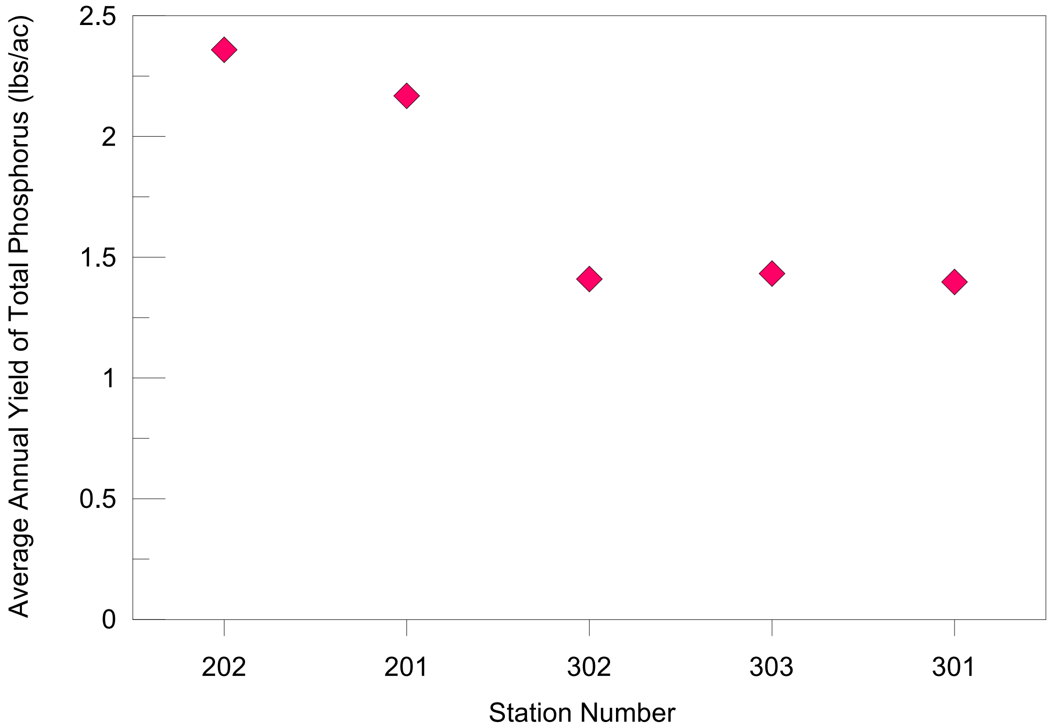


Figure 2-18. Average annual total phosphorous yield in lbs/acre for the CREP monitoring stations

Additional CREP Data Collection Efforts

In addition to the CREP monitoring in the Court/Haw and Panther/Cox watersheds, that was initiated in 1999, several additional monitoring efforts have been initiated by the ISWS through the CREP project in order to provide additional information on the role BMPs in reducing sediment and nutrient yields and to better define the context of existing CREP data on a larger watershed scale.

During September of 2006 in response to significant CREP enrollments and an intensive restoration effort by the Natural Resources Conservation Service, two additional monitoring stations (table 2-11) were installed in the Cedar Creek watershed, located in the Spoon River basin (figure 2-19). Station 306 is located on the right descending bank of the mainstem of Cedar Creek where it intersects CR 000 E in Fulton County (border with Warren Co). The second gage, station 305, is located near the left descending bank of Swan Creek, a major tributary of Cedar, where it flows beneath CR 000 E Fulton County, approximately 2.1 miles south of the Cedar Creek (306) gage.

Table 2-11. Additional CREP Monitoring Stations in the Spoon River Watershed

Station ID	*Name*	*Drainage area*	*Location*	*Watershed*
305	Swan Creek	98.1 sq mi (254 sq km)	N 40.67700 W 090.44391	Spoon River
306	Cedar Creek	146.2 sq mi (379 sq km)	N 40.70847 W 090.44540	Spoon River
RG39	Rain Gage 39	NA	N40.79145 W090.49999	Spoon River

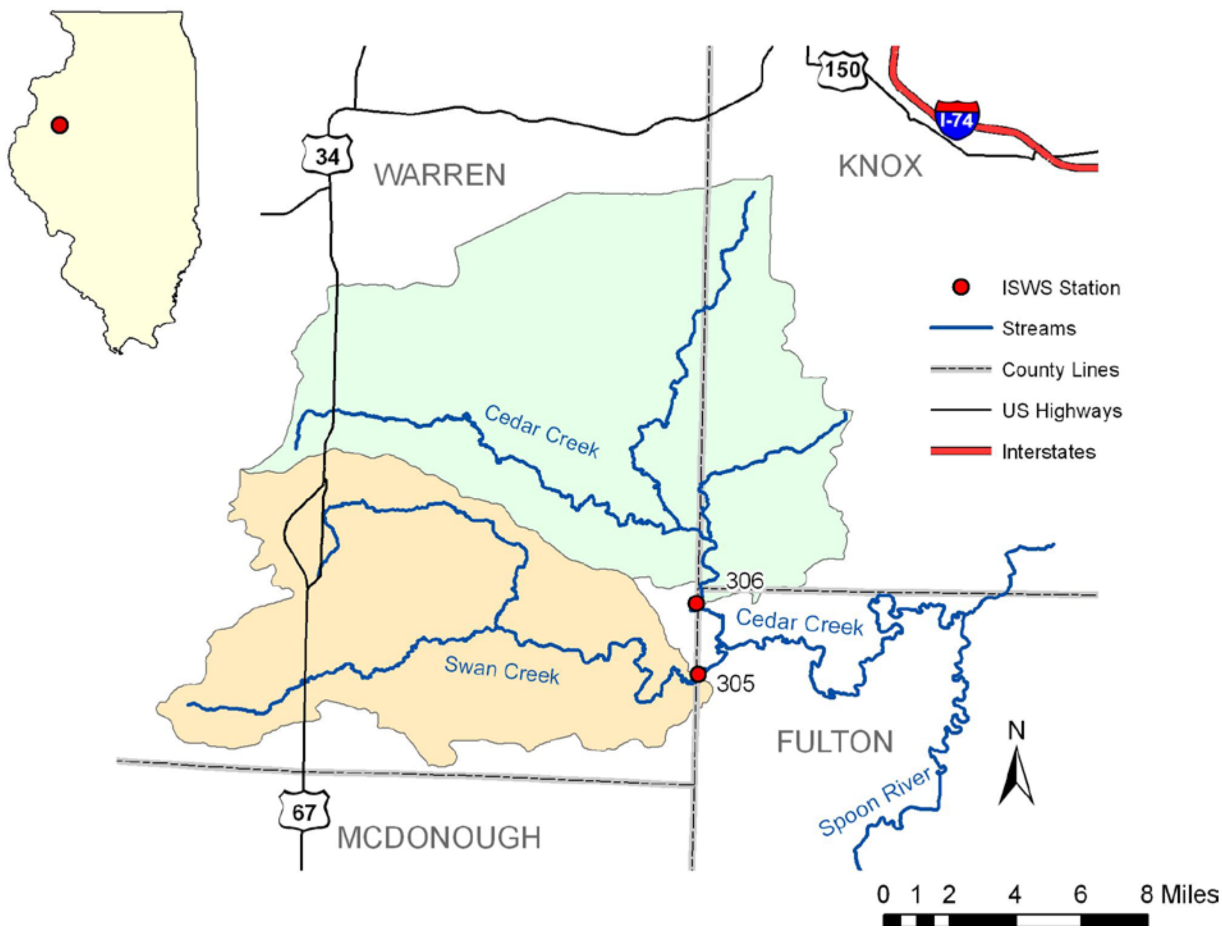


Figure 2-19. Locations of monitoring stations in the Cedar and Swan watersheds

Both watersheds are located in the Galesburg Plain physiographic region. The topography is flat to gently rolling and the soils are primarily loess. Stream channels and associated floodplains are heavily dissected with stream channels commonly being incised into the floodplain. Both watersheds are mostly rural with agriculture the predominant land use. Pasture and woodlands are also common due to the topography introduced by the dissected stream channels.

Both gages became operational near the end of Water Year 2006 (9/15/2006) and are instrumented and operated as are all CREP gages, in accordance to the CREP QAPP (Appendix A). Both stations utilize a pressure transducer to determine stage, log data on a 15 minute time step and are equipped with an ISCO automated pump sampler slaved to the stage sensor in order to augment manual discrete sampling efforts. Thirty-eight and thirty-three discharge measurements have been collected at stations 305 and 306 respectively in an effort to establish a reliable rating in as short a time as possible. Based on provisional data, summary statistics for suspended sediment concentration data is provided in table 2-12.

In addition to the two streamgages the ISWS has installed a recording raingage immediately east of CR1500E and approximately 0.5 mi north of CR1100N in Warren Co. The raingage is a modified Belfort equipped with a linear potentiometer, in order to provide a digital output, and can be operated throughout the year. Raingage deployment and maintenance as well as the download and reduction of precipitation data can be found in the CREP QAPP (Appendix A).

ISWS field staff began suspended sediment sampling at two U.S. Geological Survey (USGS) gages located on the mainstem of the Spoon River on 3/29/2004. Samples are collected weekly at both sites with additional samples collected during runoff events. Sampling at London Mills (05569500) is done from the Route 116 bridge where the USGS gaging station is located. Sediment sampling at Seville (05570000) is done approximately 1 mile downstream of the current USGS gage location on State Route 95. Current USGS sediment data are also collected at this location. As of 9/30/09, 360 samples have been collected at London Mills while 340 samples have been collected at Seville. Summary statistics for suspended sediment concentration data collected through Water Year 2008 are presented for each station in Table 2-13.

Table 2-12. Suspended Sediment Concentration Data (mg/L) for Swan and Cedar Creeks

	Swan (305)	*Cedar (306)*
Count (number)	2,011	1,975
Mean	380	513
Max	5,231	8,102
Min	2.0	1.6
Median	125	133
25^{th} Percentile	48.8	43.0
75^{th} Percentile	370	476

Table 2-13. Suspended Sediment Concentration Data (mg/L) for London Mills and Seville

	London Mills (05569500)	*Seville (05570000)*
Count (samples)	360	340
Mean	261	277
Max	4,953	3,230
Min	1.9	3.9
Median	78.6	103
25^{th} Percentile	38.1	42.1
75^{th} Percentile	270	268

3. Land Use Practices

Land Cover

The Illinois River Basin is nearly 16 million acres with a diverse range of land covers. The extent of these land covers is illustrated in figure 3-1 using the Land Cover of Illinois 1999-2000 inventory (Luman and Weicherding, 1999). This database is a product of a cooperative, interagency initiative between the U. S. Department of Agriculture National Agricultural Statistics Service (NASS), Illinois Department of Agriculture (IDA), and Illinois Department of Natural Resources (IDNR) to produce statewide land cover. The database contains 23 land cover that are grouped into 5 categories: agricultural land, forested land, urban land, wetland, and other. The agricultural land category lists corn, soybeans, winter wheat, other small grains and hay, winter wheat/soybeans, other agricultural land, and rural grassland due to the times of year the satellite imagery was taken.

The Illinois River Basin is dominated by agricultural land, comprising of 77% of the basin (figure 3-2). Corn and soybean acreage accounts for most of the agricultural land cover. Urban and forested land are the next highest with 10% and 9%, respectively. This is attributed to the areas of Chicago and surrounding urban communities, as well as the City of Peoria. Wetlands, surface water, and other combine to 4% of the remaining acreage in the Illinois River Basin. The Spoon and Sangamon River watershed area is 30% of the Illinois River Basin and the Spoon River watershed is a third of the size of the Sangamon River watershed. As can be seen in figures 3-3 and 3-4, the Spoon and Sangamon River watersheds show similar trends in land cover as the Illinois River Basin. Agricultural land cover, especially corn and soybeans, accounts for over 80% of the land area in each watershed. The largest difference between the Spoon and Sangamon watersheds is the Spoon has 10% more forested land cover than the Sangamon. Otherwise, they are similar in all other categories.

Land Use Practices

Outside of natural factors such as the physical settings and climate variability, land use practices are the main driving factors that affect watershed's hydrology, erosion, sedimentation, and water quality. It is therefore important to document and analyze changes in land use practices in a given watershed to properly understand and explain changes in its hydrology, water quality, and the erosion and sedimentation process. The Illinois River basin has undergone significant changes in land use practices during the last century. These changes have been used to explain degradation in water quality and aquatic habitat along the Illinois River. In recent years, there have been significant efforts at the local, state, and federal level to improve land use practices by implementing conservation practices throughout the watershed. The Illinois River CREP is a course of major state and federal initiatives to significantly increase conservation and restoration practices in the Illinois River basin.

Historical agricultural land use practices and the recent conservation efforts including CREP are briefly discussed in the following paragraphs.

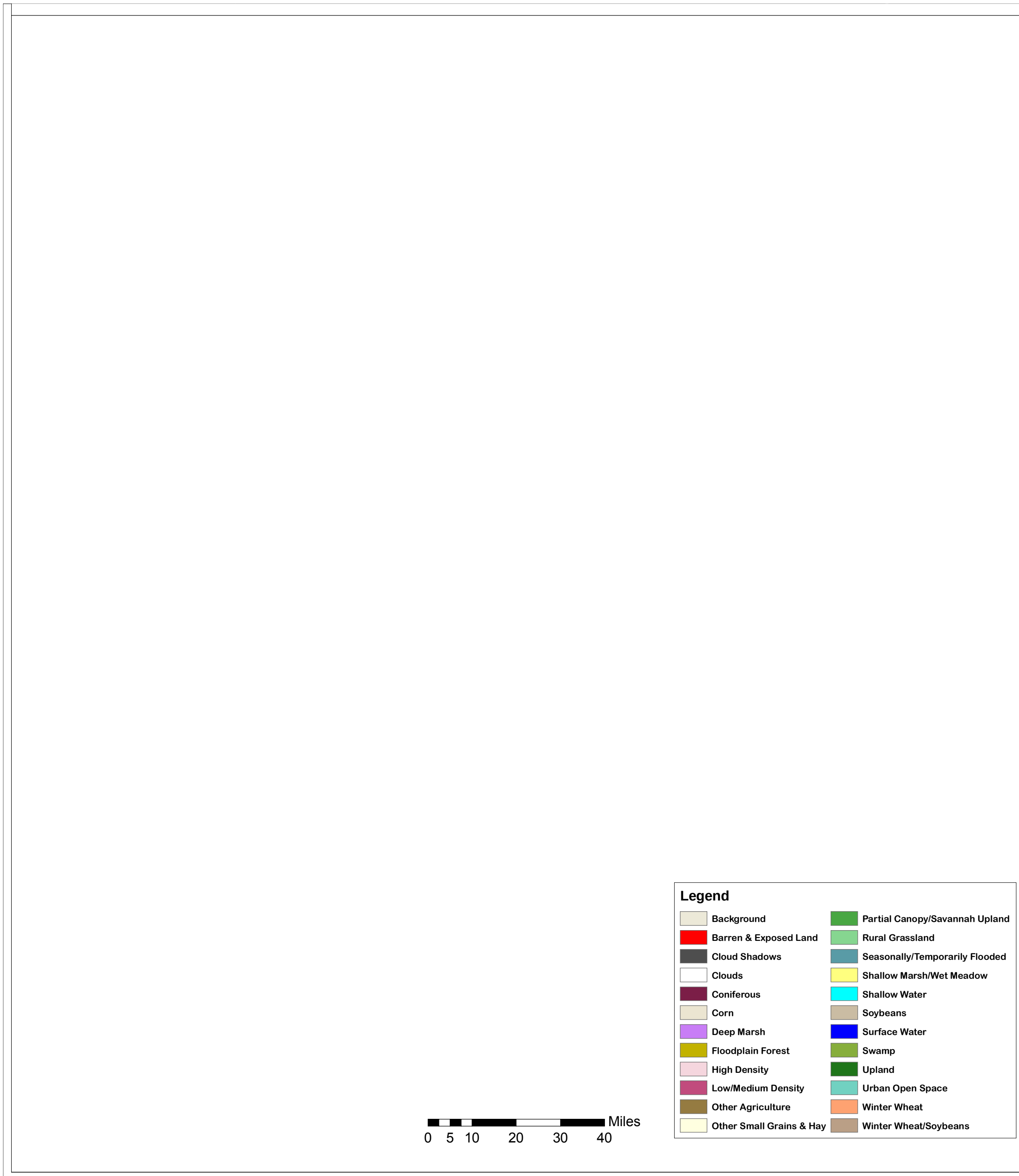


Figure 3-1. Land cover of the Illinois River Basin (Luman and Weicherding, 1999)

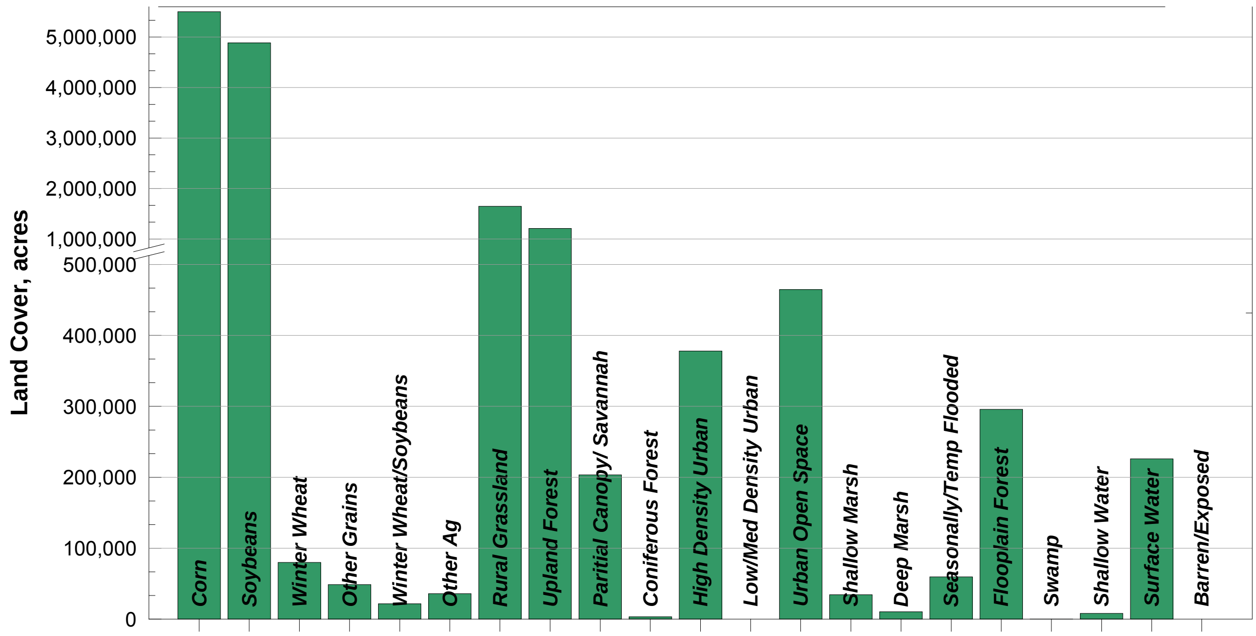


Figure 3-2. Land cover acreages in the Illinois River basin

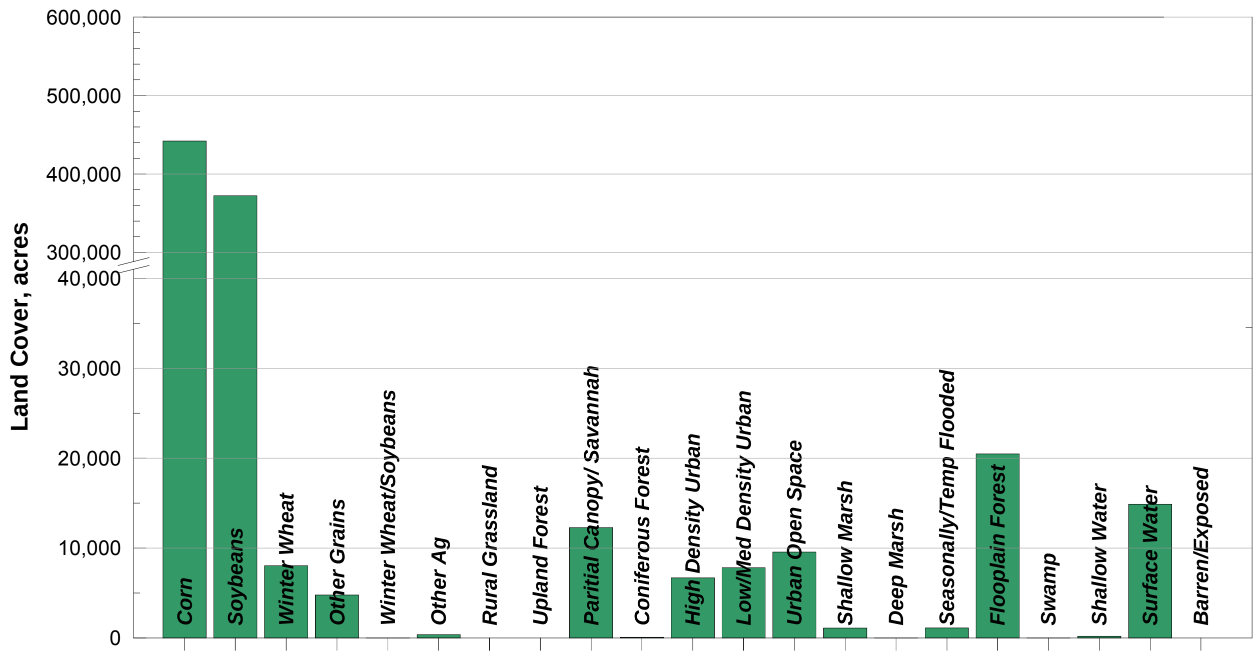


Figure 3-3. Land cover acreages in the Spoon River watershed

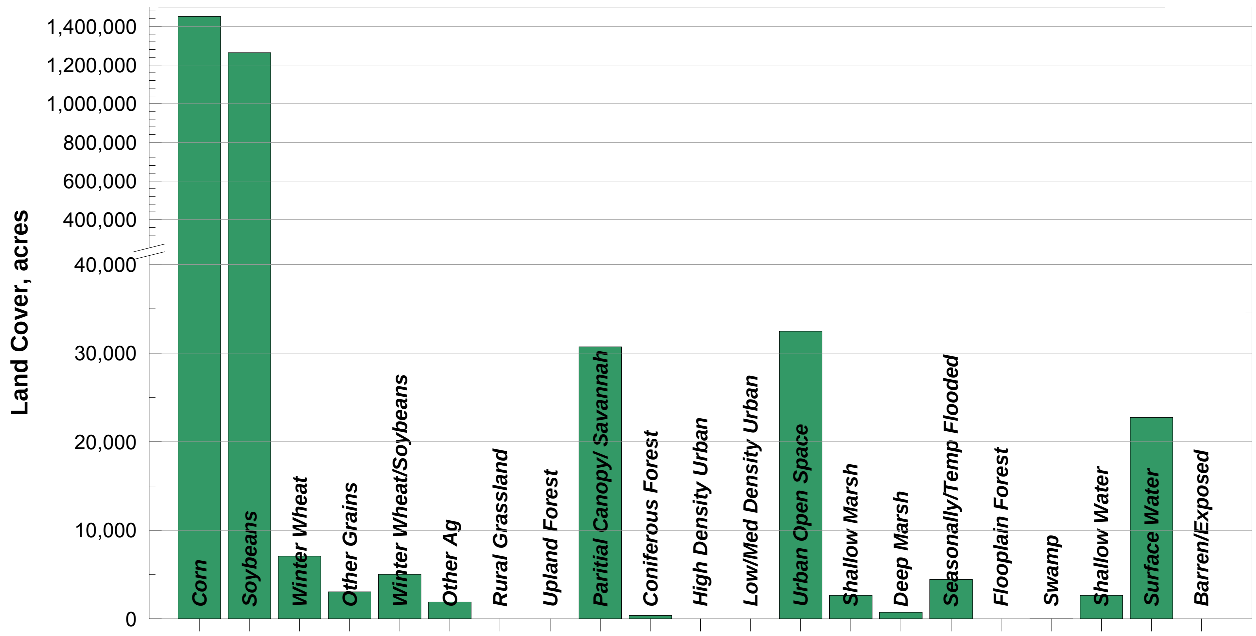


Figure 3-4. Land cover acreages in the Sangamon River watershed

Historical Agricultural Land Use Trends in Illinois

To provide a historical perspective to changes in land use practices in the Illinois River basin, we have compiled and analyzed historical land use data from different sources for the whole state. The earliest land use data is based on the Illinois Agricultural Statistics (IAS) records. The IAS data shows that in 1866 approximately 23 percent of the state's land area was in agricultural crop production (figure 3-5). In 2006, agricultural production has increased to 65 percent of the state's land. From 1866 through to the 1920s, crop production increased from 8 to 18 million acres mostly due to a three-fold increase in small grain (wheat, oats, and hay) acreage. In the 1920s small grain acreage began to decline in favor of soybeans. Essentially, from this period to present, a steady reversal in acreage has occurred between small grains and soybeans such that current soybean acreage is the same as was small grains were in the 1920s. From 1866 to 2006, total Illinois land area in crop production increased by more nearly tripled from 8 to 23 million acres. The dominant crops in 1866 were corn and small grains, whereas corn and soybeans (row crops) acreage was 93 percent of the total crop acreage in 2006. During the period of record (1866-2006), corn acreage has remained fairly steady at 9.3 million acres. Corn was harvested on 4.9 million acres in 1866 but increased to the long-term average acreage by 1881. Acreage peaked in 2005 at 12.1 million acres and was 11.3 million acres in 2006. From 1925 to 2006 crop acreage increased by 23 percent.

In 1925, IAS began delineating agricultural crop production data by county, rather than as a state total, which allows for the estimation of crop acreage by basins. The Illinois River Basin (IRB) is nearly half of the Illinois land area, and occupies over 18 million acres when the watershed area in the states of Indiana and Wisconsin are included. Figure 3-6 shows similar trends in crop production as was seen for the State of Illinois. In 1925, 51 percent (9.4 million acres) of the IRB land area was in crop production while in 2006, 56 percent (10.3 million acres)

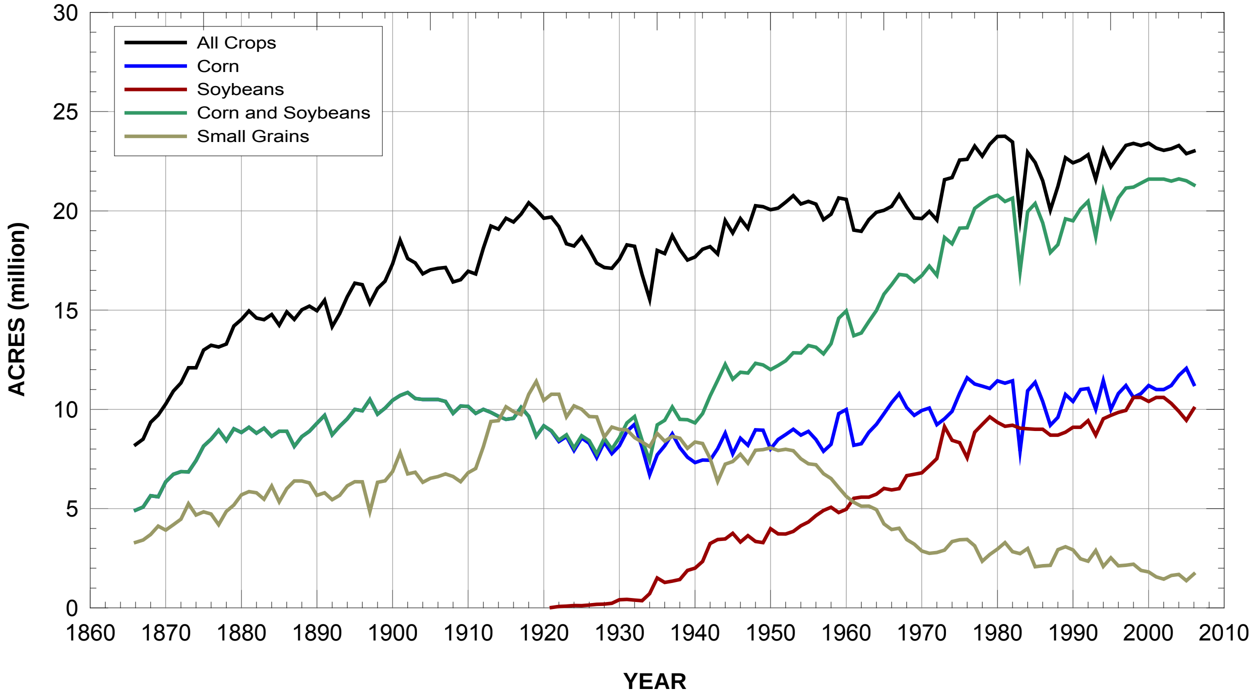


Figure 3-5. Acreage of agricultural land uses in State of Illinois (1866-2006)

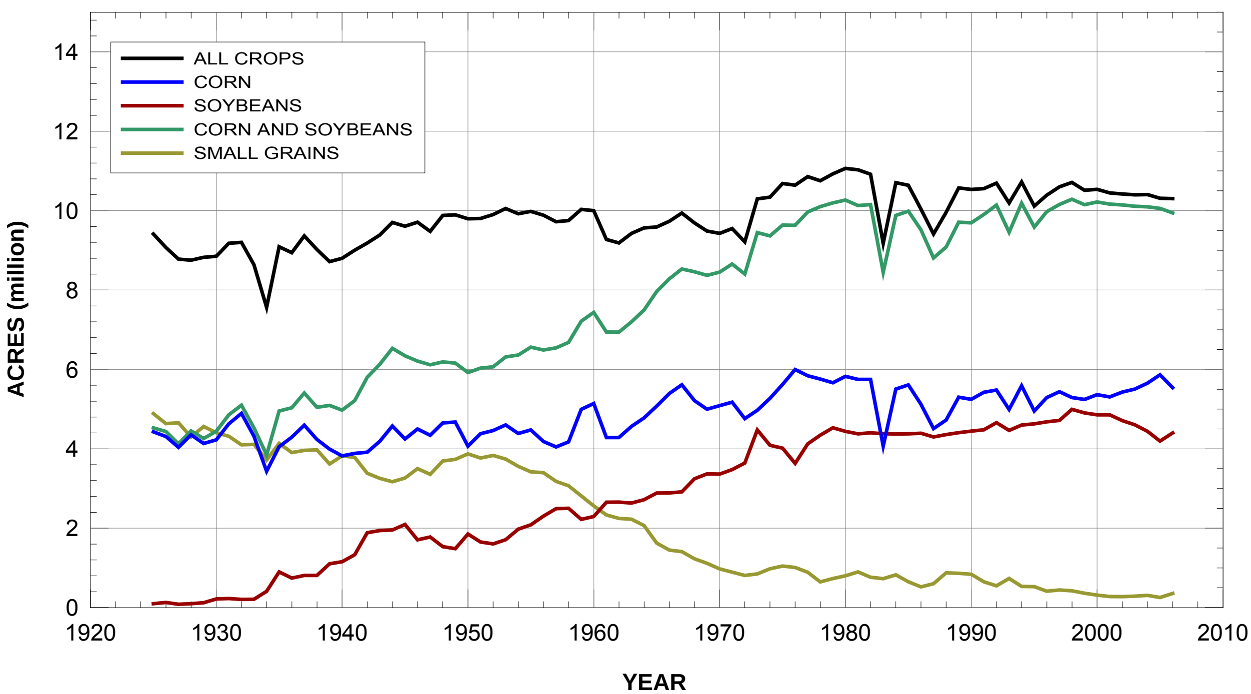


Figure 3-6. Acreage of agricultural land uses in Illinois River basin (1925-2006)

was in crop production. The same reversal of small grain and soybean acreage is also seen. Corn acreage is fairly steady for the period of record, averaging 4.8 million acres, increasing from 4.4 to 6.0 million acres from 1925 to 1976, and slightly decreasing to 5.5 million acres in 2006. Total IRB watershed area in crop production increased by 9 percent from 1925 to 2006 which is smaller than the 23 percent increase for the whole State of Illinois during the same period.

The Spoon River watershed is one of ten major tributaries to the Illinois River with a drainage area of 1.2 million acres (6.5 percent of the IRB drainage area). From 1925 to , watershed area in crop production increased from 54 to 66 percent. Figure 3-7 shows that the trends in corn, small grains, and soybeans are also similar. Corn and small grain acreage was 0.64 million acres in 1925 and in 2006 corn and soybeans were 0.75 million acres. Corn acreage increased by 0.19 million acres from 1925 to 1976 and then decreased by 0.09 million acres through 2006. The total Spoon River watershed area in crop production increased by 22 percent during 1925-2006 period and is only slightly below that of the increase in the State of Illinois and higher than the 9 percent increase for the IRB.

The Sangamon River watershed has a drainage area of 3.4 million acres (18.5 percent of the IRB drainage area). From 1925 to 2006, watershed area in crop production increased from 67 to 78 percent. Figure 3-8 shows that the trends in corn, small grains, and soybeans are also similar to the IRB. Corn and small grain acreage was 2.2 million acres in 1925 and in 2006 corn and soybeans were 2.6 million acres. Corn acreage increased by 0.37 million acres from 1925 to 2006. The total Sangamon River watershed area in crop production increased by 17 percent during 1925-2006 period and is below that of the increase in the State of Illinois and higher than the 9 percent increase for the IRB.

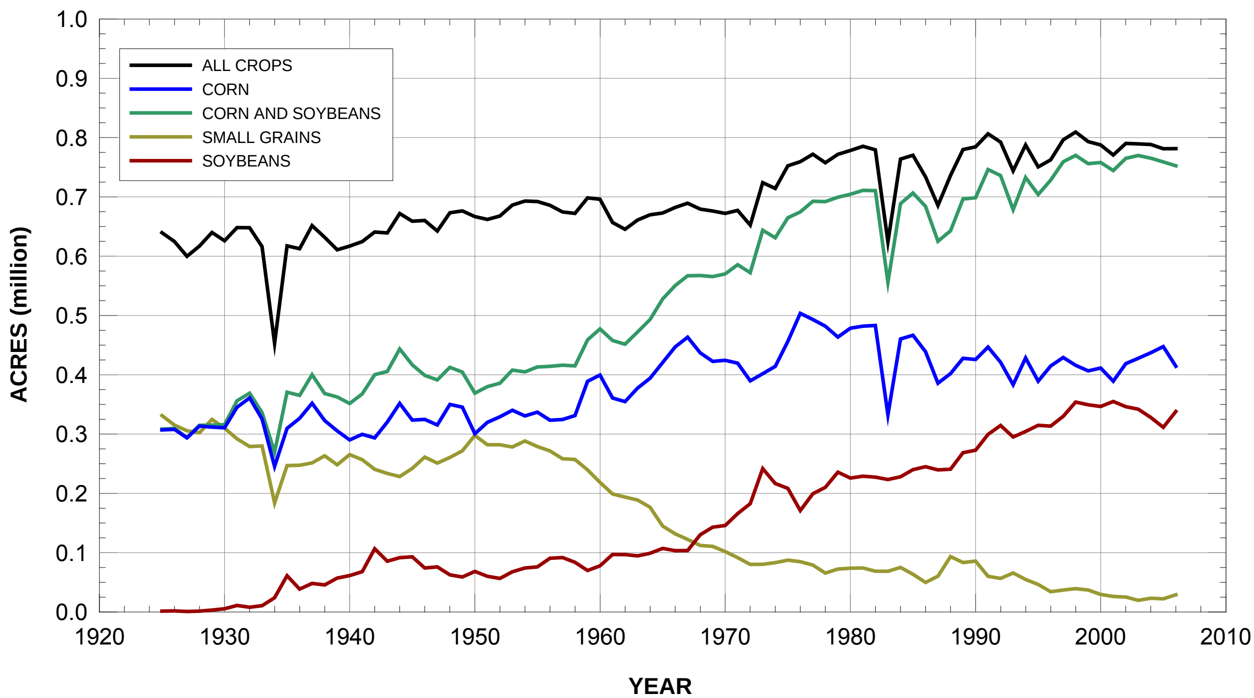


Figure 3-7. Acreage of agricultural land uses in Spoon River watershed (1925-2006)

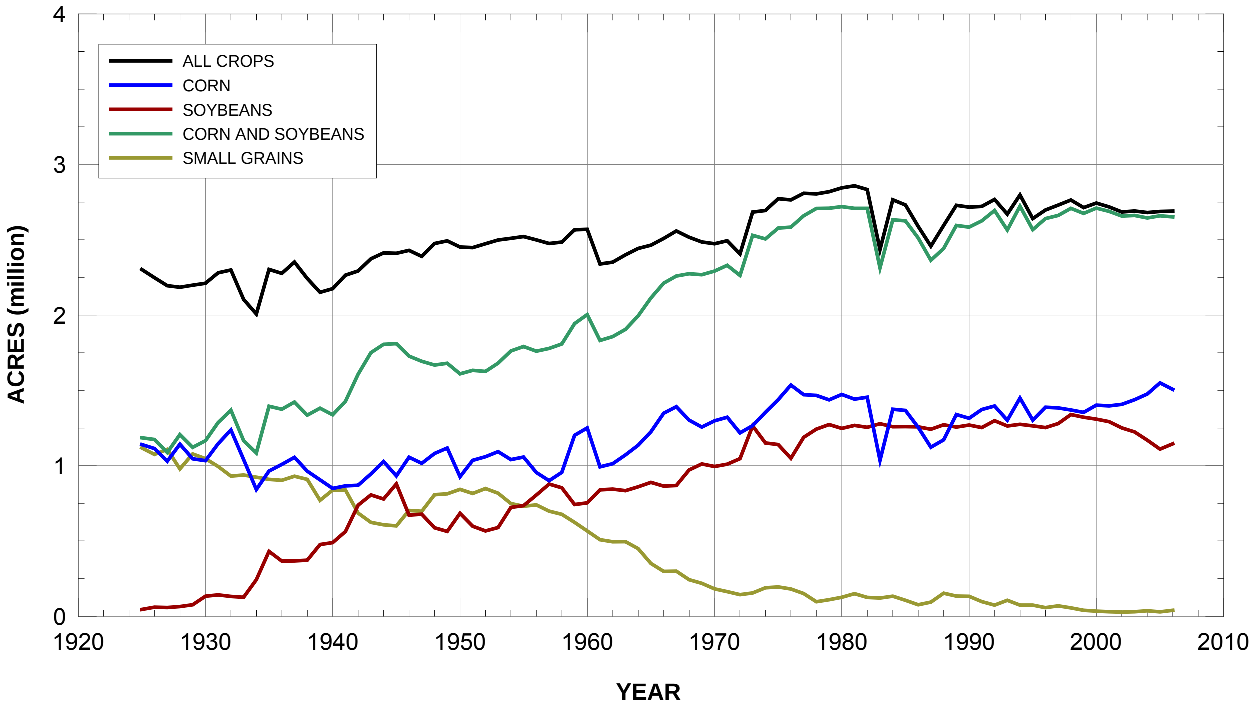


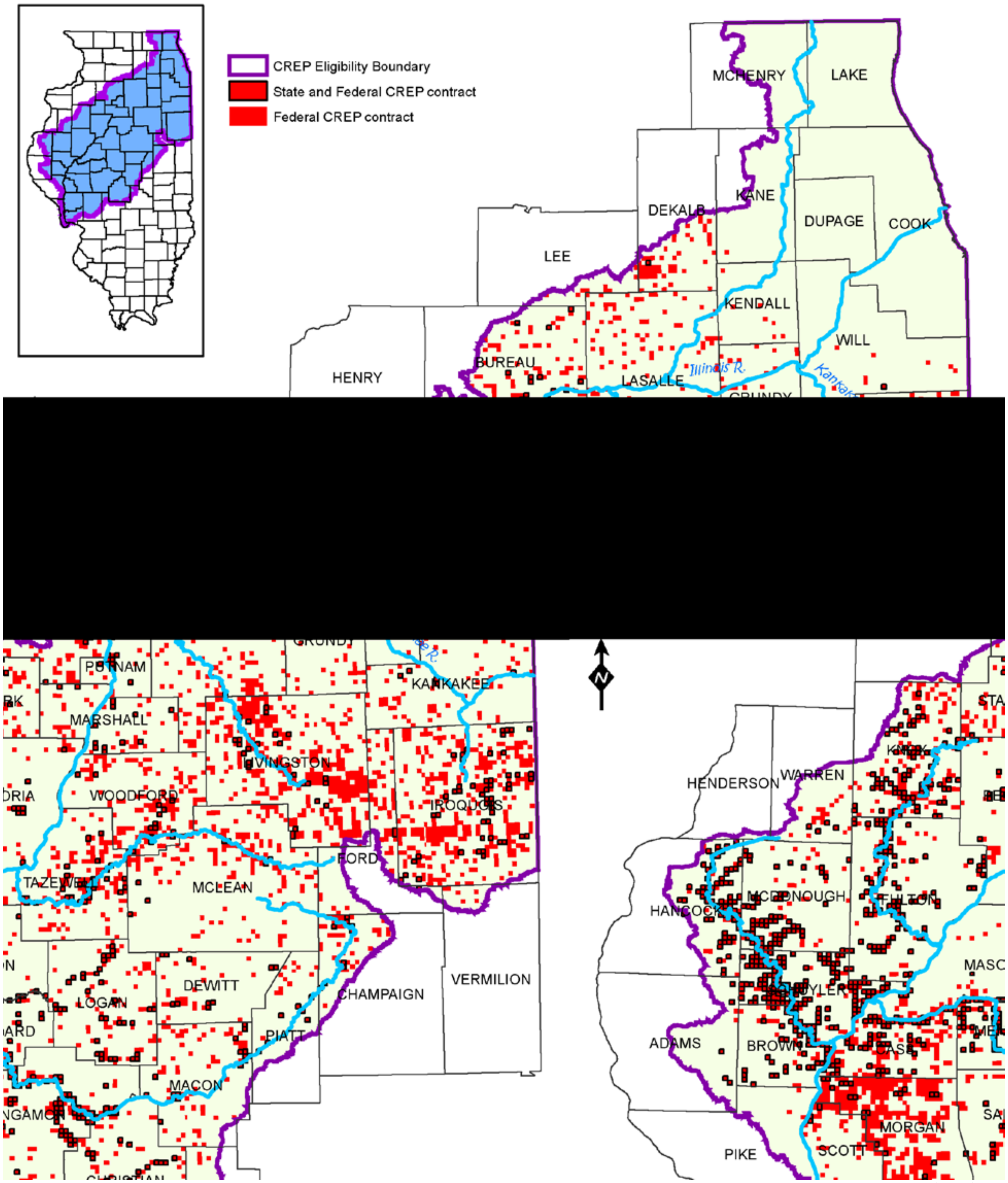
Figure 3-8. Acreage of agricultural land uses in Sangamon River watershed (1925-2006)

Overall, total crop acres within the Sangamon and Spoon River watersheds steadily increased from 1925 to the early 1980s and then remained steady through 2006. The Illinois River Basin and the entire State of Illinois show the same trend for total crop acres.

Conservation Practices

There has been a significant increase in the implementation of conservation practices in Illinois in recent years with CREP making a major contribution. IDNR has established different programs to document and track conservation practices in Illinois. The major initiative is known as the Illinois Conservation Practices Tracking System (ICPTS). The ICPTS is developing "a comprehensive database documenting the precise location, nature, and planned duration of conservation practices being implemented through Illinois CREP as well as other conservation incentive programs within the Illinois River basin," (State of Illinois, Department of Natural Resources, 2002). The database will be very useful for assessing and evaluating the effectiveness of different programs in meeting their objectives. The land use data from the database will be used along with the sediment and nutrient data being collected under the monitoring program to evaluate how conservation practices are influencing sediment and nutrient delivery to the Illinois River. Two examples of information and data on land use are shown in figures 3-9 and 3-10

Figure 3-9 shows the location of approved Illinois CREP contracts from the USDA and state of Illinois from 1999 through 2007. With this type of information it will be possible to identify areas where there has been significant participation in the CREP program and where changes in sediment and nutrient delivery should be expected. The information will provide important input data to the watershed models that are being developed to evaluate the impact of



Source: IDNR (2007)

Figure 3-9. State and Federal CREP contract locations.

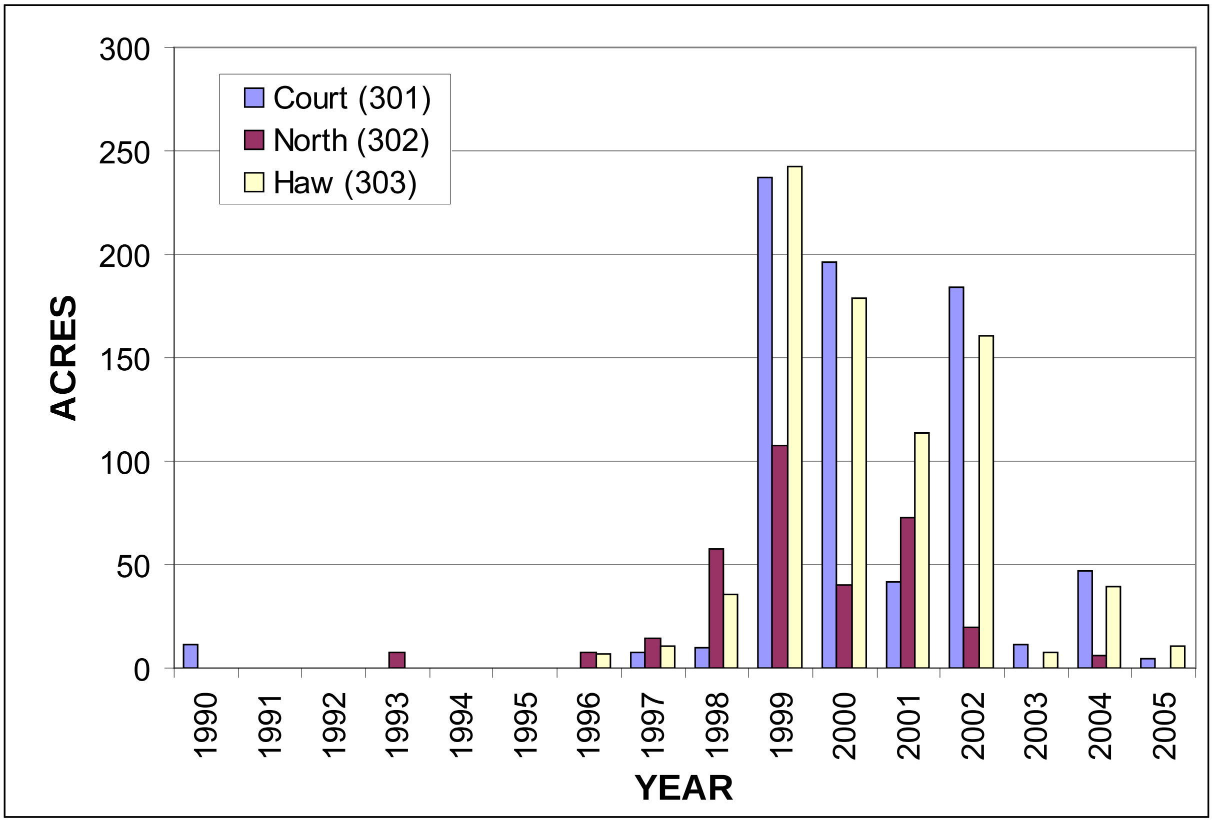


Figure 3-10. Acres of conservation practices installed in Court and Haw Creek watersheds over time

land use changes on sediment and nutrient delivery. It is also possible to extract much more detailed land use information as shown in figure 3-10 where the total acres in conservation practices are provided for small watersheds like Court and Haw Creeks on annual basis. The data shows the significant rate of increase in conservation practices in the Court and Haw Creek watersheds since 1997. This type of data will be extremely useful for assessing and evaluating the effectiveness of CREP and other conservation practices.

The Water Survey is analyzing changes in conservation practices in the Illinois River Basin since the initiation of CREP in 1998. The conservation practices data is compiled by the IDNR and USDA-FSA. The CREP conservation practices installed in the entire Illinois River Basin, as well as a more detailed conservation practice database for the four intensively monitored watersheds, is being analyzed to investigate relationships between sediment loadings and changes in conservation practices. Overall, IDNR reports that as of August 2007, 125,030 acres have been awarded by USDA-FSA CREP program with over 8,000 acres pending approval. The State of Illinois CREP program has awarded 78,288 acres with approximately 4,500 acres pending in county Soil and Water Conservation offices. More detailed information on CREP acres is available through 2005 with analysis of 2006-2007 in progress. Therefore, below are some statistics of the conservation practices through 2005:

Illinois River Basin

- Conservation practice acres within the Illinois River Basin (IRB):
  - The IRB has approximately 153,000 acres of conservation practices installed since 1999.
  - The majority of the CREP acres (91 percent) are located in the Illinois River Valley and the La Moine, Sangamon, Spoon, and Iroquois River subwatersheds.
  - There are 16 different conservation practices (table 3-1) being used in the IRB CREP program. Five of the 16 practices account for 94 percent of the total CREP acres.
  - Wetland restoration (CP23) is the most used conservation practices covering nearly 38 percent of the total CREP acres in the IRB. This is followed by riparian buffer (CP22), permanent wildlife habitat, noneasement (CP4D), filter strips (CP21), and hardwood trees (CP3A) at 25, 15, 11, and 5 percent, respectively.
- Conservation practice acres within each subwatershed:
  - Distribution of conservation practices installed varies between subwatersheds.
  - Wetland restoration is the dominant conservation practice in the Illinois River Valley and the La Moine, Iroquois, and Kankakee River subwatersheds (47, 65, 52, and 45 percent, respectively).
  - In the Sangamon River subwatershed 32 percent of the conservation practices were riparian buffers and 25 percent in permanent wildlife habitat (noneasment).
  - In the Spoon River subwatershed, the dominant conservation practices installed were wetland restoration and riparian buffers at 29 and 30 percent of the total CREP acres.

Table 3-1. Description of Conservation Practices Used in the Illinois River Basin CREP

Practice code	*Practice description*
CP1	Establishment of permanent introduced grasses and legumes
CP2	Establishment of permanent native grasses
CP3	Tree planting
CP3A	Hardwood tree planting
CP4B	Permanent wildlife habitat (corridors), noneasement
CP4D	Permanent wildlife habitat, noneasement
CP5A	Field windbreak establishment, noneasement
CP8A	Grass waterways, noneasement
CP9	Shallow water areas for wildlife
CP11	Vegetative cover - trees - already established
CP12	Wildlife food plot
CP16A	Shelterbelt establishment, noneasement
CP21	Filter strip
CP22	Riparian buffer
CP23	Wetland restoration
CP25	Rare and declining habitat

CREP Monitoring Watersheds

Court/Haw Creeks (Knox County)

- The Court and Haw Creek watersheds have a total of 1896 acres of conservation practices installed under CREP and CRP. These acres are located in the watershed area being monitored by the ISWS at three separate locations (figure 1-2). Court Creek (301) has 767 acres, North Creek (302) has 323 acres, and Haw Creek (303) has 806 acres.
- Almost 70 percent of the conservation practice acres in the Court (301) and North (302) watersheds are riparian buffer, wetland restoration, and filter strips. Permanent wildlife habitat, riparian buffer, and filter strips account for 61 percent of the conservation practices in the Haw (303) watershed.
- Most of the conservation practice acres in the three watersheds were installed between 1999 and 2002 (figure 3-10).

Panther/Cox Creeks (Cass County)

- The Panther and Cox Creek watersheds have 887 acres of conservation practices.
- Approximately 147 acres (16 percent) have been installed above the two ISWS streamgages.
    - Panther (201): 129 acres
    - Cox (202): 18 acres
- Nearly all the conservation practices installed in the watershed upstream of Panther (201) has been riparian buffers (126 acres) funded by CREP.
- The 18 acres of conservation practices installed above Cox (202) were cool/warm season grass/shrubs and grass waterways funded by CREP, CRP, and WHIP (Wildlife Habitat Incentives Program).

Variability and Trends in Precipitation and Streamflow

Results of a short-term monitoring program have to be viewed with respect to the climatic and hydrologic conditions under which the data was collected. Under ideal conditions, which rarely happen, the monitoring period would include a combination of wet, dry, and normal climatic conditions that represent the range of variability in climatic and hydrologic conditions in the watershed. The influence of climatic and hydrologic conditions on the data collected has been taken into consideration, especially when different datasets collected at different times and conditions are combined or compared. The Illinois River basin, as any major watershed, has experienced significant variability in precipitation and streamflow over the last century and recent periods. Data collection for the CREP program started in 1999 to provide a perspective as to how the current monitoring period compares to the long-term variability of precipitation and stramflows within the Illinois River basin. Historical precipitation and streamflow data are analyzed and presented in this segment of the report.

Climate and hydrologic records from the past 100 years in Illinois show considerable long-term variability. These variabilities and trends were analyzed for two stations on the Illinois River and six tributary stations in the Illinois River basin (figure 3-11). Figure 3-12

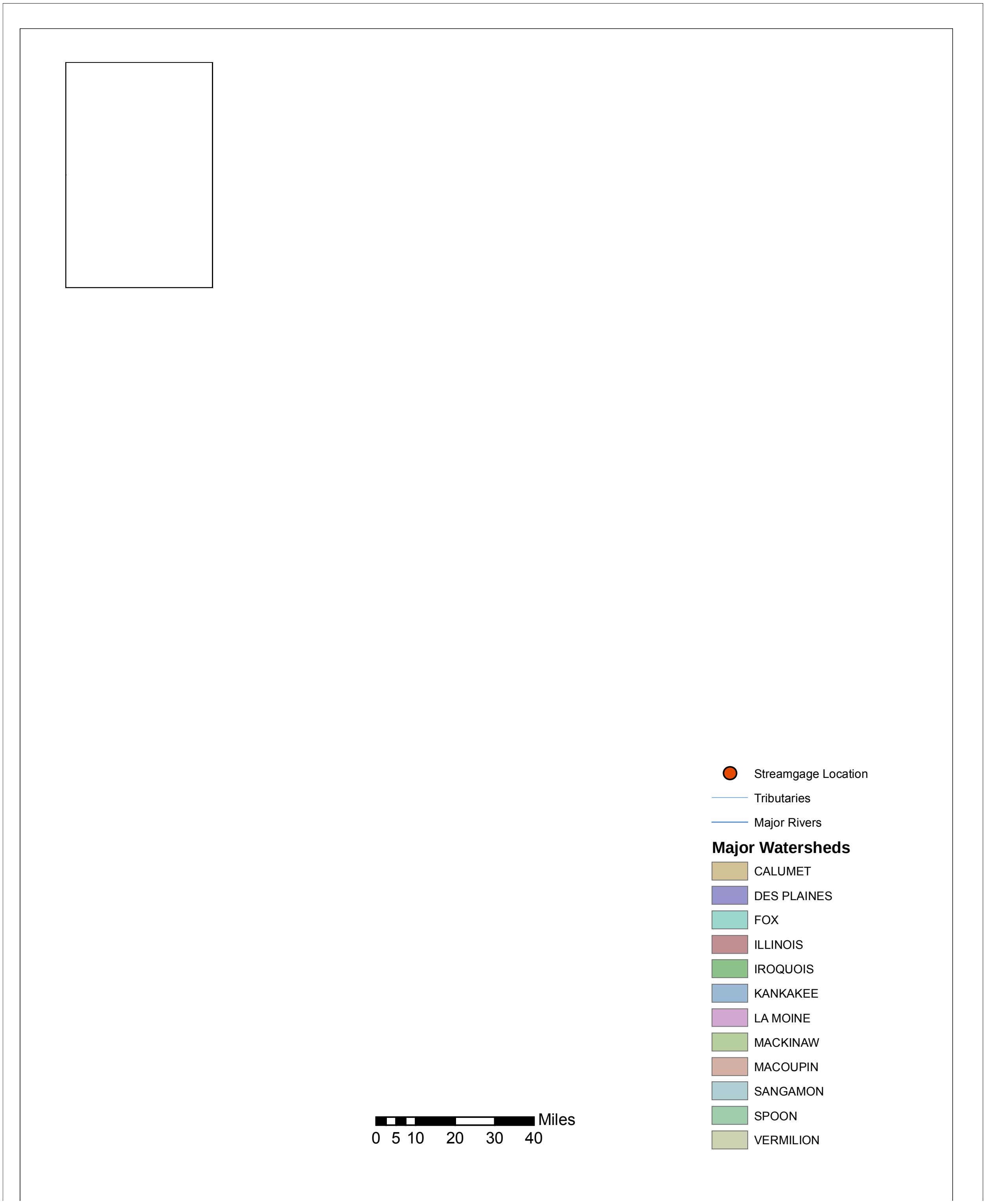


Figure 3-11. Location of streamgaging stations with long-term data used in the analysis of variability and trends

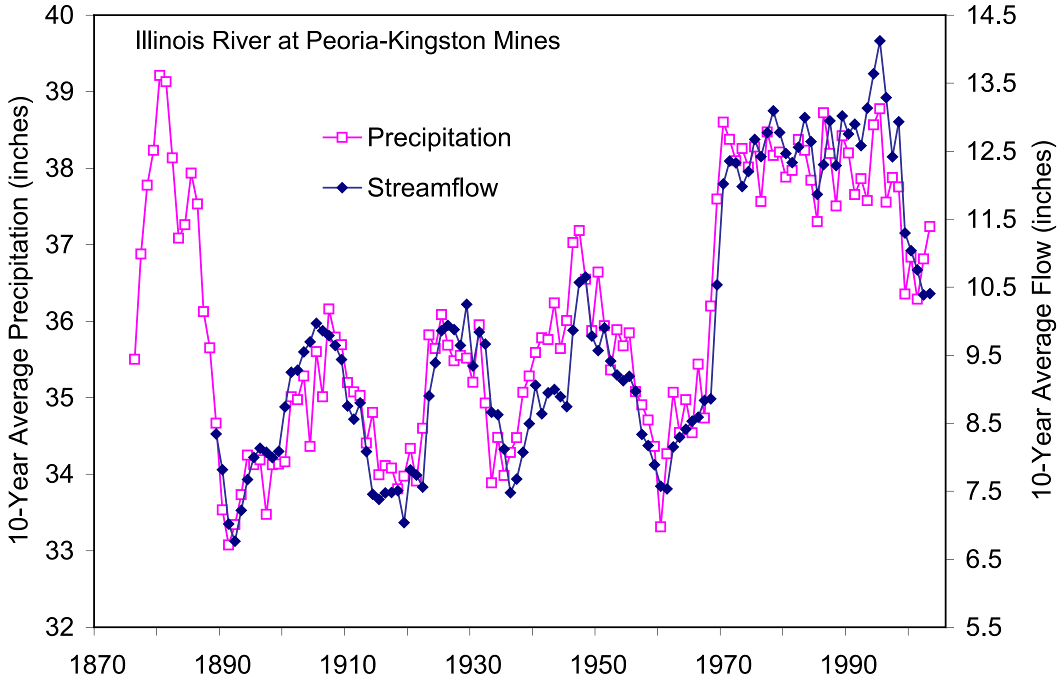


Figure 3-12. Ten-year average precipitation and streamflow,
Illinois River at Peoria-Kingston Mines

compares average precipitation and streamflow for the Upper Illinois River watershed since the 1880s, as expressed in moving 10-year average values. Similar comparisons are shown in figures 3-13 to 3-18 for the Fox, Kankakee, Spoon, Sangamon, LaMoine, and Macoupin subwatersheds, respectively, but for shorter time periods as limited by the available gaging records. Figure 3-19 for the entire Illinois River Basin (at the Valley City streamgage) is nearly identical to figure 1 except for the period of record. The 10-year average precipitation and streamflow values plotted in figures 3-12 to 3-19 represent the approximate midpoint of the 10 years; for example, the value for 1995 represents the average for 10 years from 1990-1999, the value for 1996 represents the average for the 10 years 1991-2000, and so forth. Streamflow values are expressed in inches of water spread uniformly over the entire watershed such that average streamflow can be compared directly with precipitation for the concurrent period. Streamflow values in figure 3-12 are computed from flow and stage records at Peoria prior to 1940 and at Kingston Mines since 1940.

Figure 3-12 shows that precipitation and streamflow in the Upper Illinois River watershed from 1970 to 1995 were considerably higher than at any other time in the 20th Century. Prior to 1895, precipitation for the Illinois River watershed is estimated from a small set of gaging records dating back to 1870. These precipitation records show that there was a decade of high precipitation in the late 1870s and early 1880s similar in magnitude to high precipitation amounts during 1970-1995. A comparison of 10-year average precipitation and streamflow amounts clearly shows that streamflow has been very closely related to concurrent precipitation throughout the past 125 years, with a correlation coefficient (*r*) of 0.958.

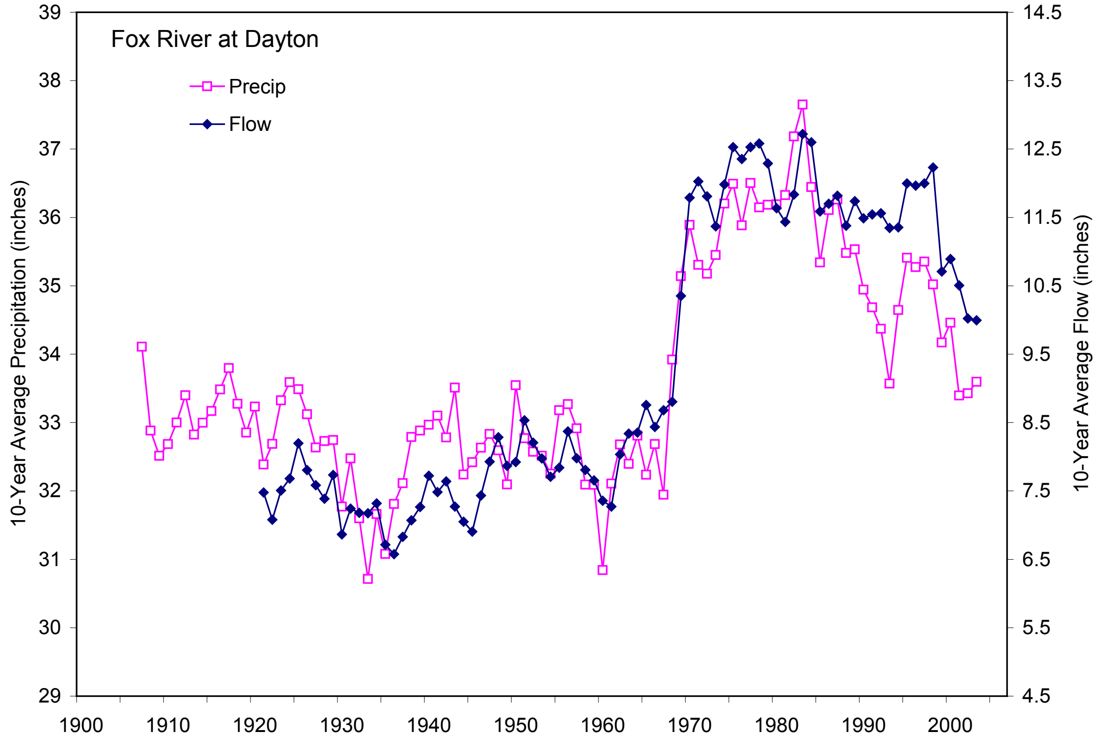


Figure 3-13. Ten-year average precipitation and streamflow, Fox River at Dayton

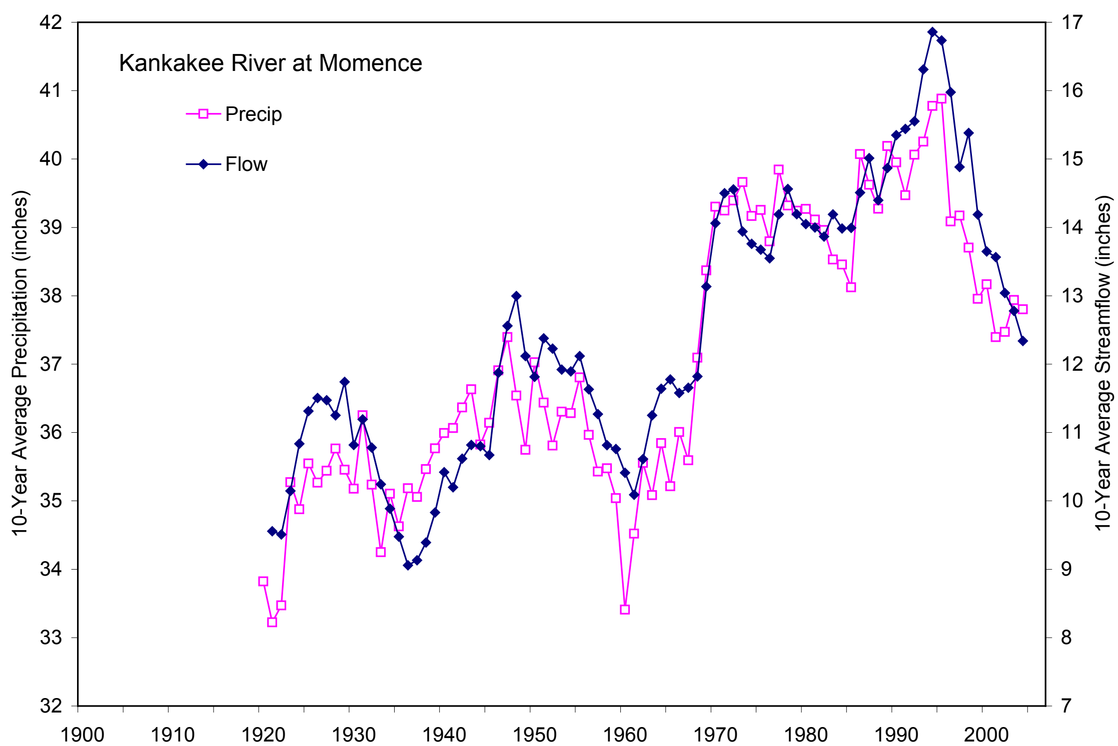


Figure 3-14. Ten-year average precipitation and streamflow, Kankakee River at Momence

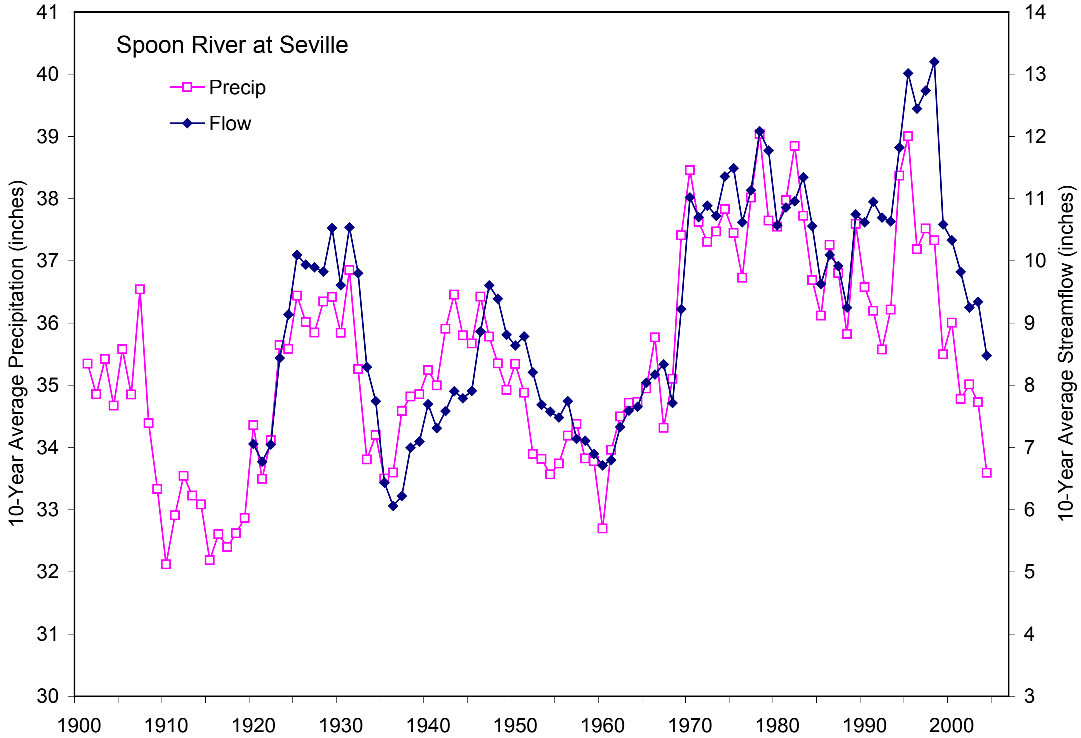


Figure 3-15. Ten-year average precipitation and streamflow, Spoon River at Seville

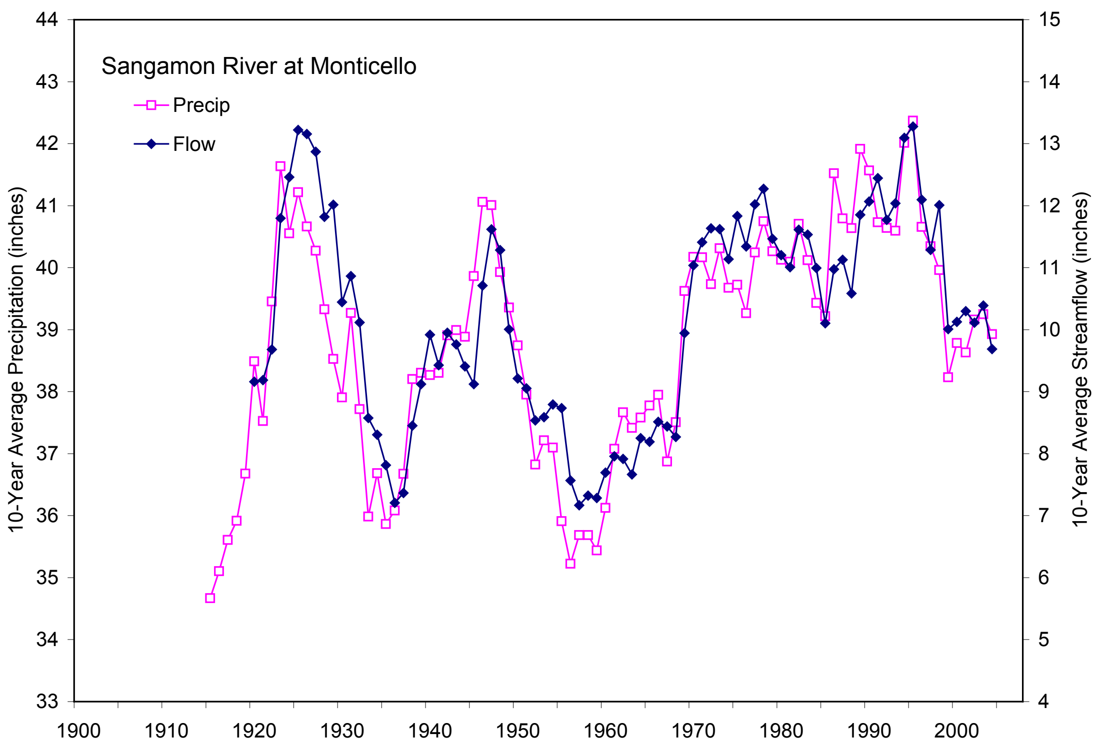


Figure 3-16. Ten-year average precipitation and streamflow, Sangamon River at Monticello

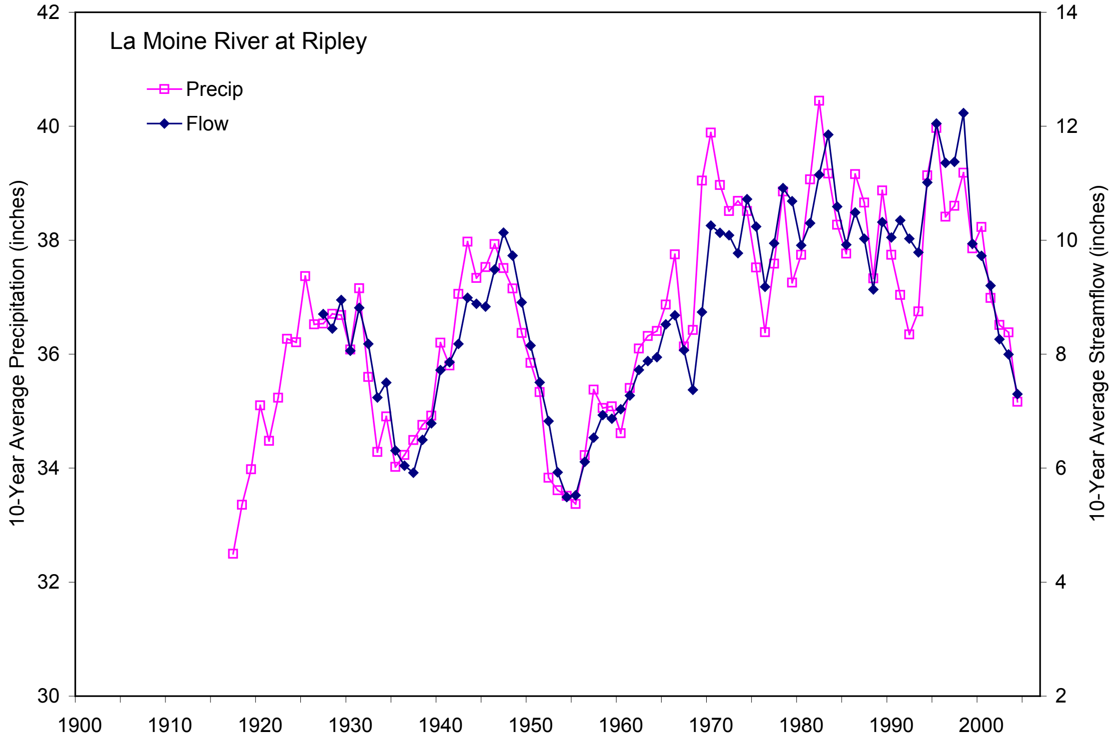


Figure 3-17. Ten-year average precipitation and streamflow, LaMoine River at Ripley

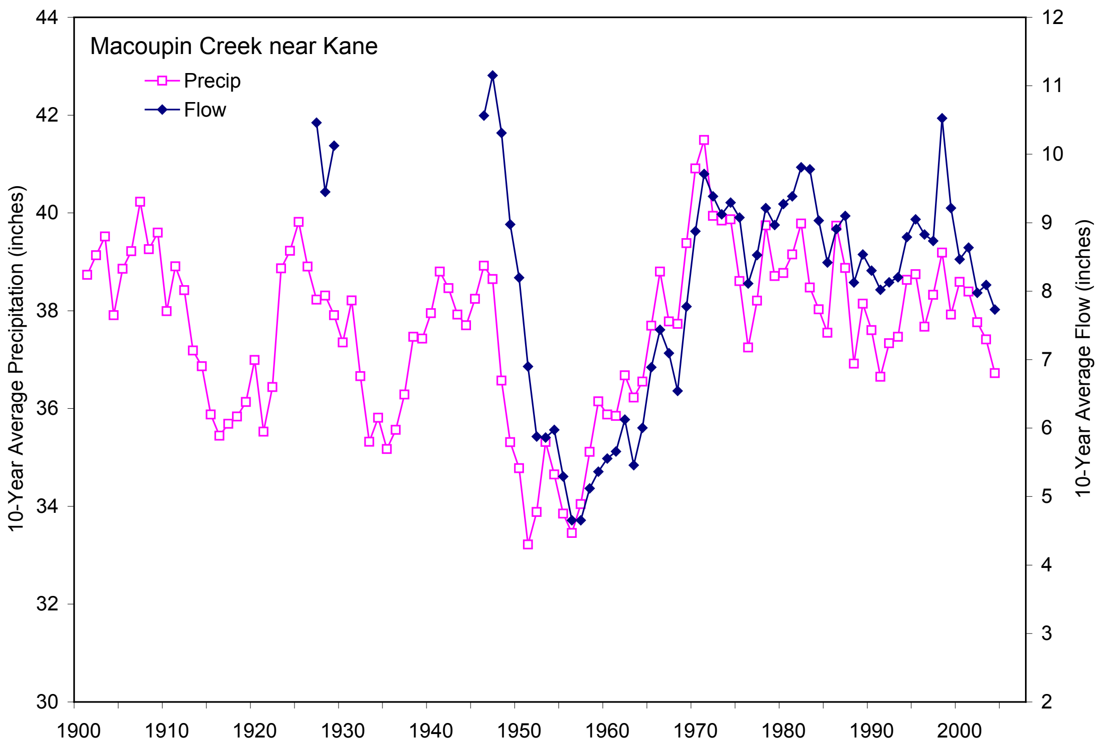


Figure 3-18. Ten-year average precipitation and streamflow, Macoupin Creek near Kane

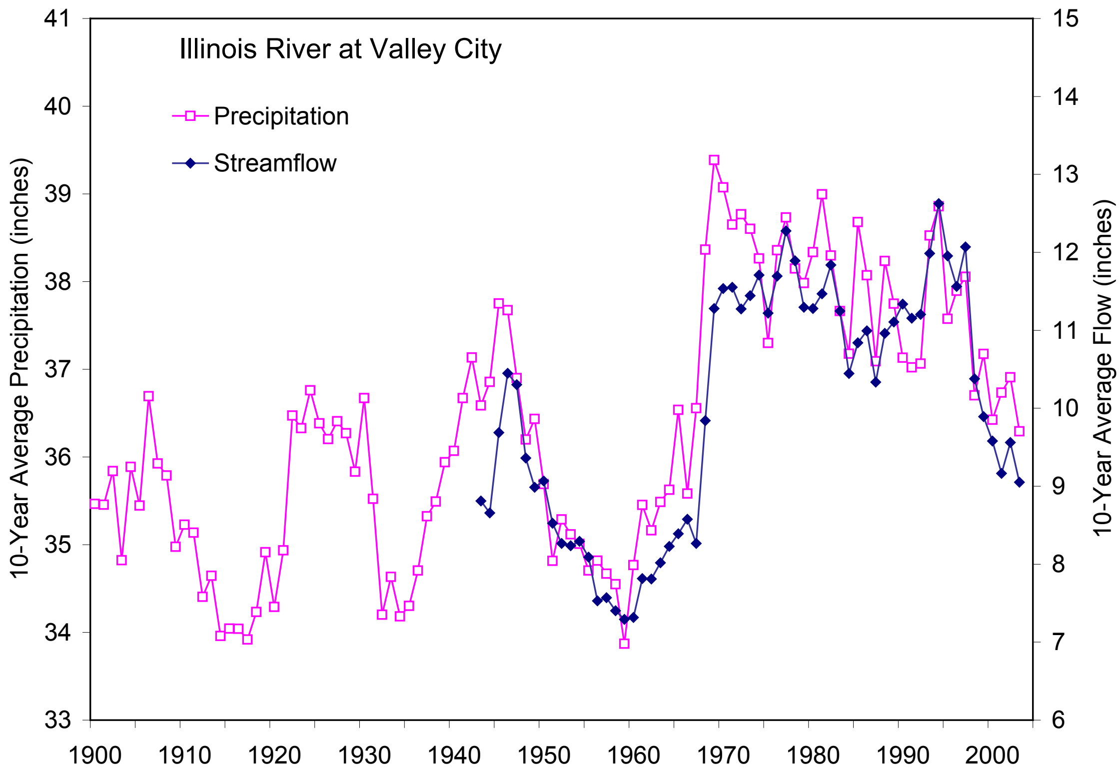


Figure 3-19. Ten-year average precipitation and streamflow, Illinois River at Valley City

Precipitation and streamflow trends shown in figure 3-12 are consistent with regional trends that have affected northern Illinois and much of the upper Midwest (Knapp, 2005). Statistical analyses of long-term streamflow records by Knapp (2005) using the Kendall tau-b trend statistic indicate that streamgage records in northern Illinois, eastern Iowa, and Minnesota all exhibit increasing trends in average streamflow (figure 3-20). Conversely, long-term flow records in the southern two-thirds of Illinois generally do not show significant increases in streamflow.

Figures 3-13 to 3-18 illustrate that trends in precipitation and streamflow vary across the Illinois River watershed. Increasing trends are particularly evident in the Upper Illinois River watershed and its two primary tributaries, the Fox and Kankakee River (figures 3-13 and 3-14). In contrast, the Macoupin, LaMoine, and Sangamon River subwatersheds, in the southern portion of the Illinois River basin, show much less or no overall trend in precipitation or streamflow — even though these records show considerable variation in precipitation and streamflow from decade to decade. The Spoon River watershed, having an intermediate location, shows an increasing trend in flow amount, but to a lesser degree than the Fox and Kankakee River watersheds located farther to the north. In all cases, there is a strong correlation between average precipitation and streamflow.

The significance of the trends is identified using the Kendall tau-b statistic. The Kendall tau-b statistical test provides a quantitative measure of trend, with a coefficient value of 0 indicating no trend and a value of 1 indicating an absolute increasing trend. For the 93-year flow

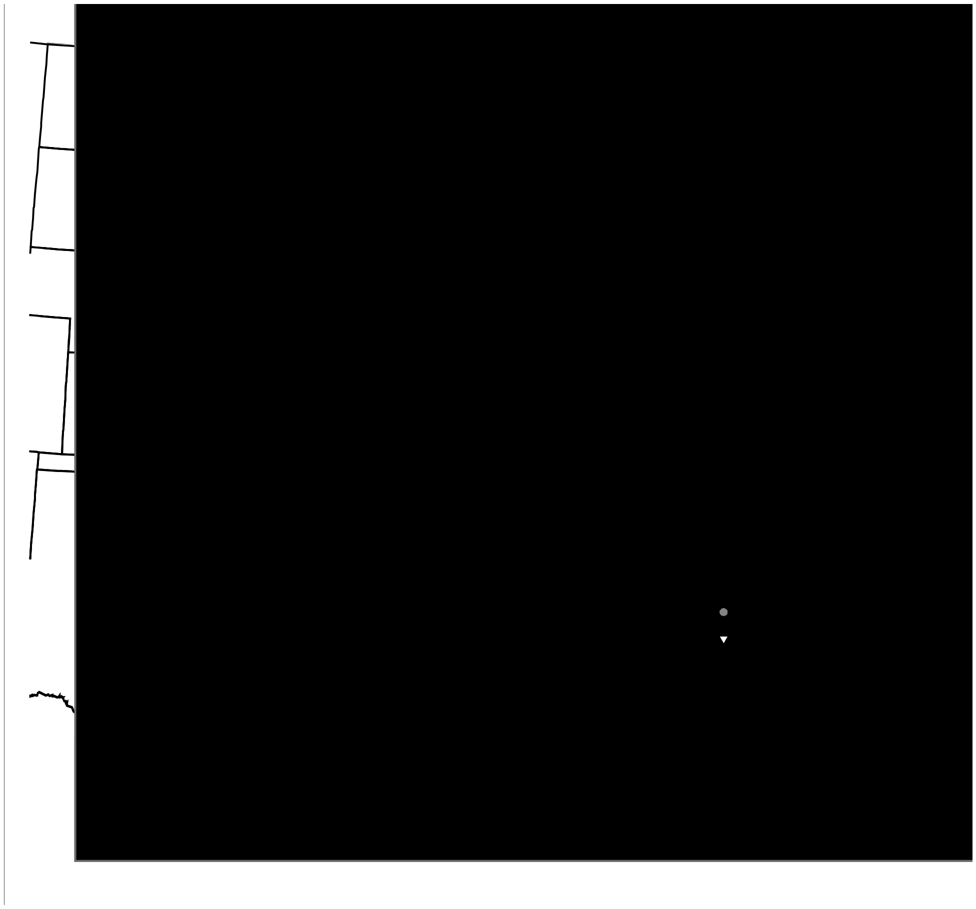


Figure 3-20. Locations of long-term streamflow gages (at least 89 years of record) showing statistically significant trends in mean annual flow in the eastern United States (from Knapp, 2005)

records dating back to 1915, a coefficient value greater than or equal to 0.115 indicates an increasing trend at a 90 percent confidence level, and a value greater than or equal to 0.162 indicates an increasing trend at a 98 percent confidence level. Table 3-2 shows the Kendall Tau-b trend coefficients computed for two time periods, 1915-2007 and 1970-2007. The 1915-2007 trend analyses for the Fox, Kankakee, and Upper Illinois (Peoria-Kingston Mines) flow records show increasing trends with very high levels of confidence. The 1915-2007 trend analysis for the Spoon River record shows an increasing trend, with roughly a 94 percent level of confidence. The flow records for the tributaries located farther south in the watershed do not show a significant trend (having less than an 80 percent level of confidence). The 1915-2007 trend coefficient for the Illinois River at Valley City is not shown because the flow record does not date back to 1915.

Although flow records from the northern half of the Illinois River watershed display an general increasing trend over their full period of record, a closer look indicates: 1) there was a geographically widespread and sizable jump in average flow amount between the 1960s and 1970s (this jump also occurred in the southern part of the basin to a lesser extent); and 2) for most locations there has been little or no additional increase since the 1970s. In fact, for most

Table 3-2. Kendall Tau-b Trend Statistics for Flow Records on the Illinois River and Major Tributaries

Streamgage record	*Kendall Tau-b coefficient value period-of-record used in the analysis* 1915-2007	*1970-2007*
Fox River at Dayton	0.294	-0.135
Kankakee River at Momence	0.316	-0.007
Illinois River at Peoria-Kingston Mines	0.315	-0.144
Spoon River at Seville	0.127	-0.127
Sangamon River at Monticello	0.087	-0.081
LaMoine River at Ripley	0.075	-0.166
Macoupin Creek near Kane*	-0.009	-0.081
Illinois River at Valley City**	------	-0.112

Notes:
* The periods of record for the Macoupin Creek gage near Kane are 1921-1933 and 1941-2007.
** The flow record at Valley City only extends back to 1939. The trend coefficient for the 1939-2007 period at Valley City, 0.162, is somewhat less than the trend coefficient for Peoria-Kingston Mines for the same time period (0.192).

locations, the average flows since 1995 have declined from the high flow levels that occurred from 1970 to 1995. Table 3-3 presents the average annual precipitation and streamflow amounts for the Illinois River and its major tributaries over the past 12 years (1996-2007) and compares these amounts to those for earlier periods (1915-1969 and 1970-1995) and to the overall long-term record. Except for the Kankakee River, the average flow from 1996-2007 for these rivers is much closer to the long-term average than it is to the higher flow amounts that were experienced from 1970 to 1995. Thus, with the exception of the Kankakee River watershed, it is reasonable to conclude that other flow records collected throughout the Illinois River watershed over the 1996-2007 timeframe may represent conditions similar to their expected long-term average condition.

Although it is not possible to predict how these trends will progress in the future, concerns expressed in previous decades regarding the potential for continued increases in flows throughout the Illinois River watershed (for example by Ramamurthy et al., 1989) for the time being may no longer be an issue. If anything, there may be growing concerns that the occurrence of drought periods such as existed prior to 1970 may become more frequent. This analysis does not specifically look at trends of flooding or low flows. However, for long-term gaging records in the Illinois River watershed, Knapp (2005) found that trends in high flows and low flows tended to be coincident and proportional to trends in average flow.

Table 3-3. Average Annual Precipitation and Streamflow (inches) for Different Periods of Record

Precipitation

Watershed	*1915-2007*	*1915-1969*	*1970-1995*	*1996-2007*
Fox	33.7	32.6	35.9	34.4
Kankakee	37.0	35.5	39.5	38.4
Upper Illinois (Peoria)	36.3	35.2	38.3	37.1
Spoon	35.7	34.9	37.7	34.8
Sangamon	38.9	38.1	40.7	38.9
LaMoine	36.6	35.8	38.6	35.9
Macoupin	37.4	37.0	38.6	36.9
Entire Illinois (Valley City)	36.5	35.6	38.3	36.6

Streamflow

Watershed	*1915-2007*	*1915-1969*	*1970-1995*	*1996-2007*
Fox	9.3	7.7	12.1	10.0
Kankakee	12.3	10.9	14.7	13.5
Upper Illinois (Peoria)	10.2	8.8	12.9	10.8
Spoon	9.1	8.0	11.3	9.2
Sangamon	10.4	9.5	12.4	10.1
LaMoine	8.7	7.7	10.7	8.2
Macoupin	8.4	8.1	9.1	7.8
Entire Illinois (Valley City)	9.8	8.4	11.7	9.5

4. Model Development and Application

The Illinois State Water Survey has been developing a watershed model for the Illinois River basin in support of the Illinois River Ecosystem project. In the initial phase, a hydrologic model of the entire Illinois basin has been developed and used to evaluate potential impacts of land use changes and climate variability on streamflow in the Illinois River basin. The model is based on the U.S. Environmental Protection Agency’s BASINS 3.0 modeling system. The Hydrologic Simulation Program – FORTRAN or HSPF (Bicknell et al., 2001) which is part of BASINS was used to simulate the hydrology of the Illinois River basin. The HSPF is a comprehensive and dynamic watershed model that also has the capability to simulate water quality and sediment transport.

To make the model applicable for assessing and evaluating the impact of CREP and other land use changes on water quality and sediment transport, the Water Survey has been developing the sediment transport and water quality capabilities of the HSPF model for the Illinois River basin. The initial effort has focused on the Spoon River watershed (figure 4-1) where two of the four intensively monitored watersheds, Court and Haw Creek, are located. Streamflow, sediment, and water quality data being collected at three monitoring stations are being used to calibrate and test the model for the Spoon River watershed. Once the calibration and validation process are completed for the Spoon River watershed, the model parameters can be used to develop models for other similar watersheds to simulate the hydrology, sediment transport and water quality under different climatic and land use scenarios. Over time, as land use practices change significantly as a result of CREP and other conservation practices, the models being developed will provide the tools to evaluate and quantify changes in water quality and sediment delivery to the Illinois River.

The progress in model development for the Spoon River watershed is discussed in the following sections.

HSPF Model

The HSPF model is a conceptual, comprehensive, long term continuous simulation watershed scale model which simulates non-point source hydrology and water quality, combines it with point source contributions, and performs flow and water quality routing in the watershed and its streams. The HSPF model simulates land-surface portion of the hydrologic cycle by a series of interconnected storages – an upper zone, a lower zone, and a ground-water zone. The fluxes of water between these storages and to the stream or atmosphere are controlled by model parameters. The model uses a storage routing technique to route water from one reach to the next during stream processes.

For sediment simulation, the surface erosion component of the HSPF model performs processes such as sediment detachment from the soil matrix in the pervious land segments during rainfall event, washoff of this detached sediment, scour of the soil matrix, and reattachment or compaction of the sediment. Storage and washoff of sediments from the impervious surfaces is


Upper Fox
Des Plaines
Chicago/Calumet
Lower Fox
Kankakee
Upper Illinois
Spoon
Mackinaw
Vermilion
Iroquois
La Moine
Salt Fork Sangamon
Lower Sangamon
Upper Sangamon
Lower Illinois
South Fork Sangamon
Macoupin
Major Rivers
Spoon Watershed
Watershed Boundaries
Illinois River Basin
State of Illinois

also considered. The sediment load and transport in the stream channel is dependent on the particle diameter, density, fall velocity, shear stress for deposition and scour, and erodibility. The noncohesive (sand) and cohesive (silt and clay) sediment transport is simulated in the model using different subroutines.

Nutrients in the watershed soil in the HSPF model are simulated either as attached to organic or inorganic solids, dissolved in the overland flow, or as concentrations in the subsurface flow reaching the streams laterally. For both nitrogen and phosphorous compounds, the processes simulated include immobilization, mineralization, nitrification/denitrification (nitrogen only), plant uptake, and adsorption/desorption. The nutrient loads from the watershed undergo further transformation in the stream reaches.

Model Input Data

The HSPF model requires spatial information about watershed topography, river/stream reaches, land use, soils, and climate. The hourly time-series of climate data required for hydrologic simulations using HSPF include precipitation, potential evapotranspiration (ET), potential surface evaporation, air temperature, dew-point temperature, wind speed, and solar radiation. The hourly precipitation data from the two ISWS gages, one each in Court Creek (ISWS31) and Haw Creek (ISWS32) watersheds, were used (figures 4-2 and 4-3). Daily precipitation data from the MRCC (Midwestern Regional Climate Center) gaging station at Galesburg (ID 113320) was also used after it was disaggregated into hourly data based on the hourly precipitation data from an ICN (Illinois Climate Network) station located in Monmouth (MON). The other time series of the climate inputs for the above three precipitation stations were obtained from the ICN station at Monmouth. Daily data from nine additional MRCC stations (figure 4-4) in or near the Spoon River watershed were also disaggregated into hourly data based on the hourly data from three stations at Peoria, Moline, and Augusta, as found in the BASINS database. These additional stations were used for the Spoon River watershed model.

For topographic inputs, the 30-meter Digital Elevation Model (DEM) raster dataset produced by the Illinois State Geological Survey (ISGS) and the United States Geological Survey (USGS) was used. The high resolution National Hydrography Dataset (NHD) developed by the USGS was used to provide stream/river reach information to the model. The land use data were obtained from the Illinois Department of Agriculture which is based on the satellite imagery of the State of Illinois acquired from three dates during the spring, summer, and fall seasons of 1999 and 2000. Land use in the study watersheds was classified as corn, soybean, rural grassland, forest, urban, wetland and other (figures 4-5, 4-6, and 4-7). The soils data were based on digitized County Soil Association Maps of the Knox County and the STATSGO dataset (figure 4-8). The soil type for various parts of the study watersheds were determined spatially from the digitized soils maps, but the parameters corresponding to the soil type were manually entered during development of the HSPF model.

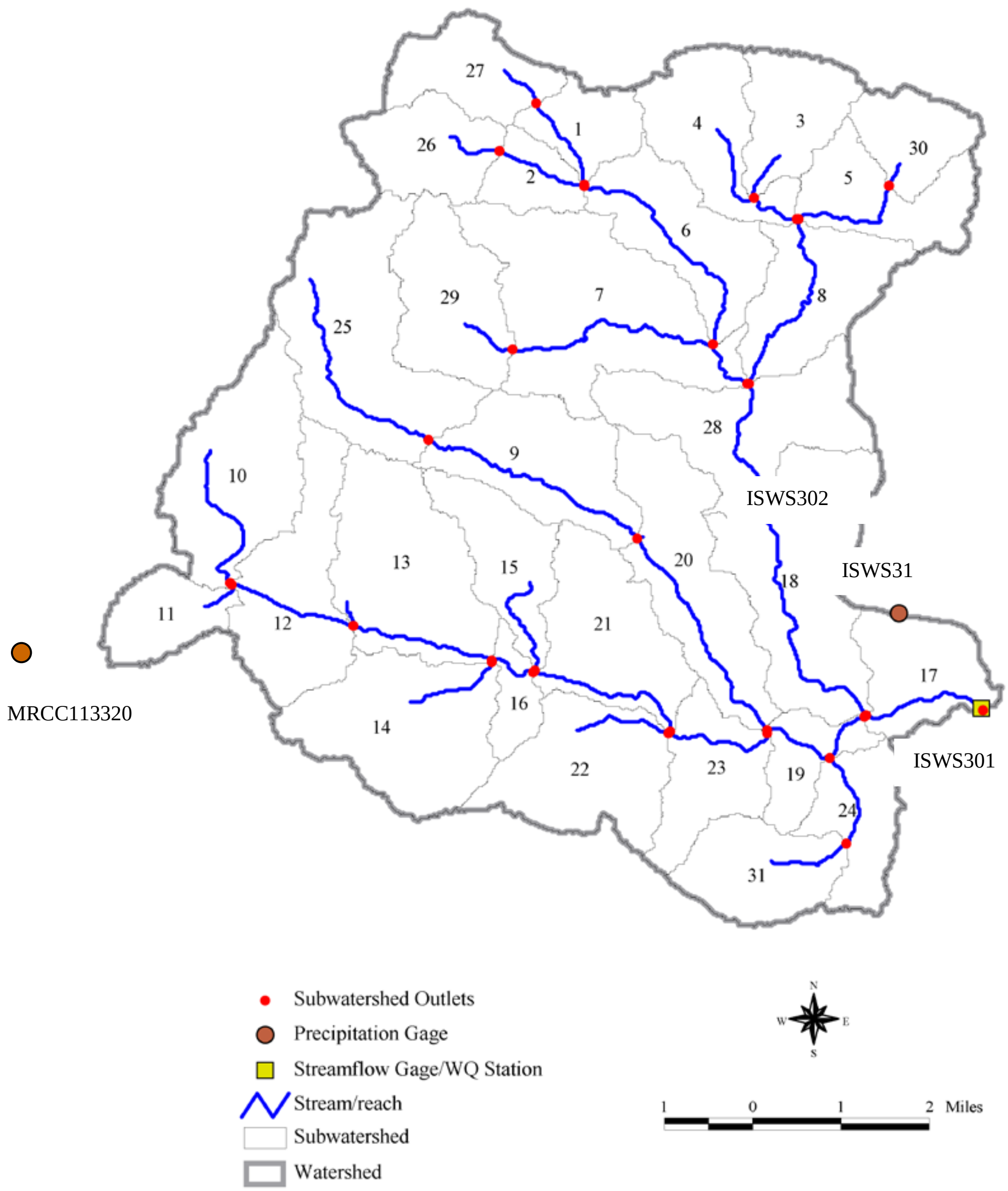


Figure 4-2. Schematic of the subwatershed and stream delineation, and precipitation gages used for the Haw Creek model

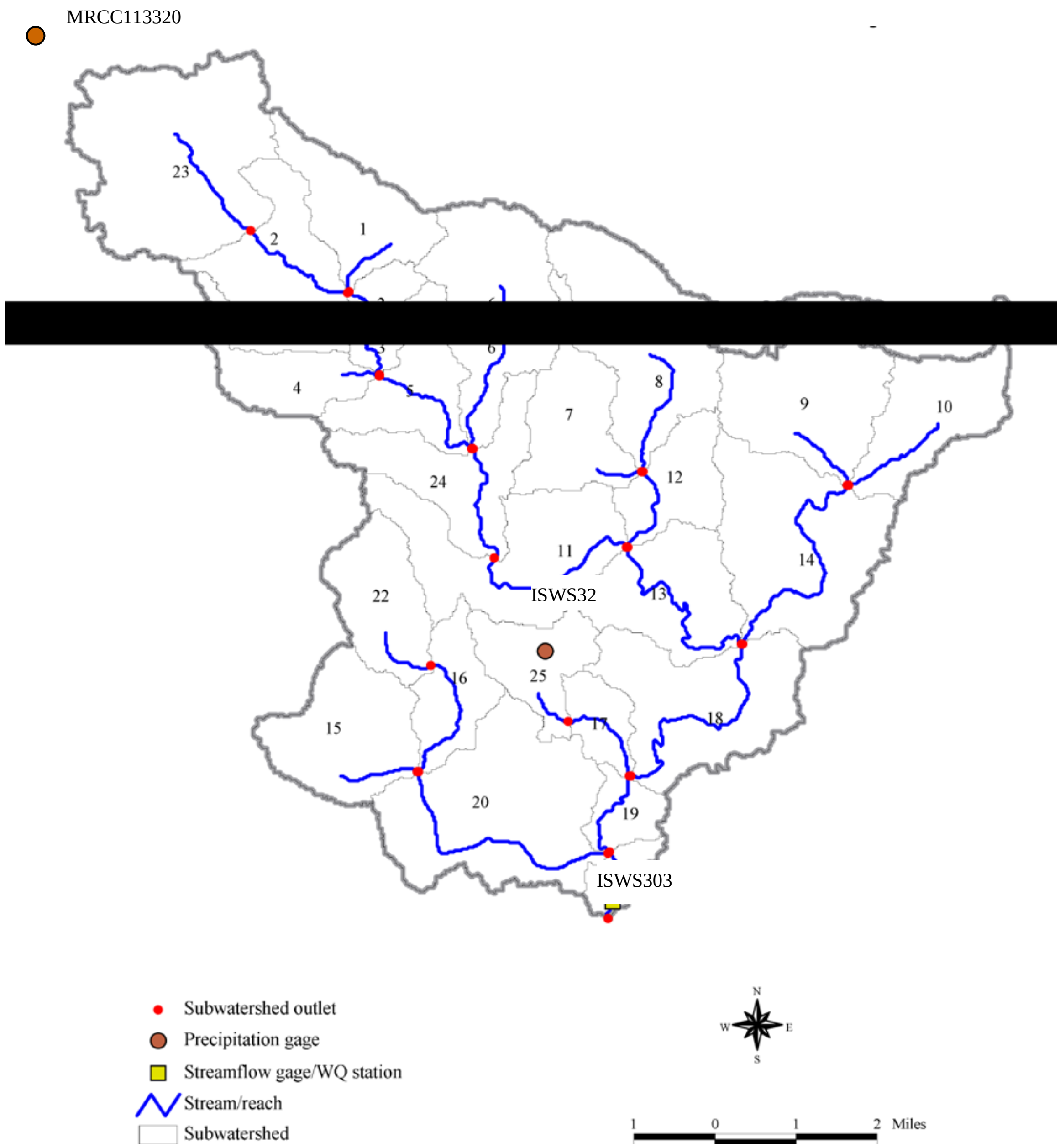


Figure 4-3. Schematic of the subwatershed and stream delineation, and precipitation gages used for the Haw Creek model

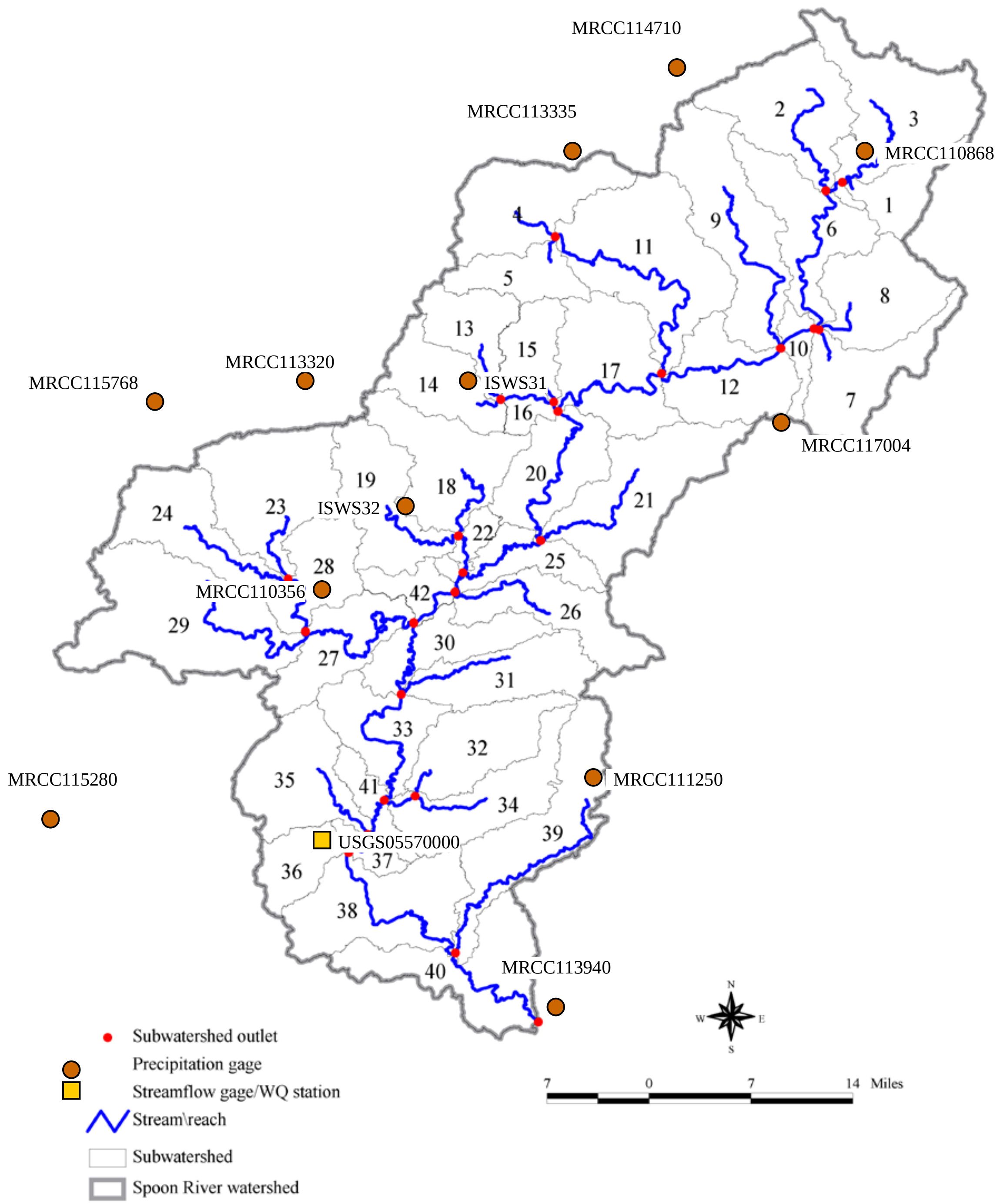


Figure 4-4. Schematic of the subwatershed and stream delineation, and precipitation gages used for the Spoon River watershed model

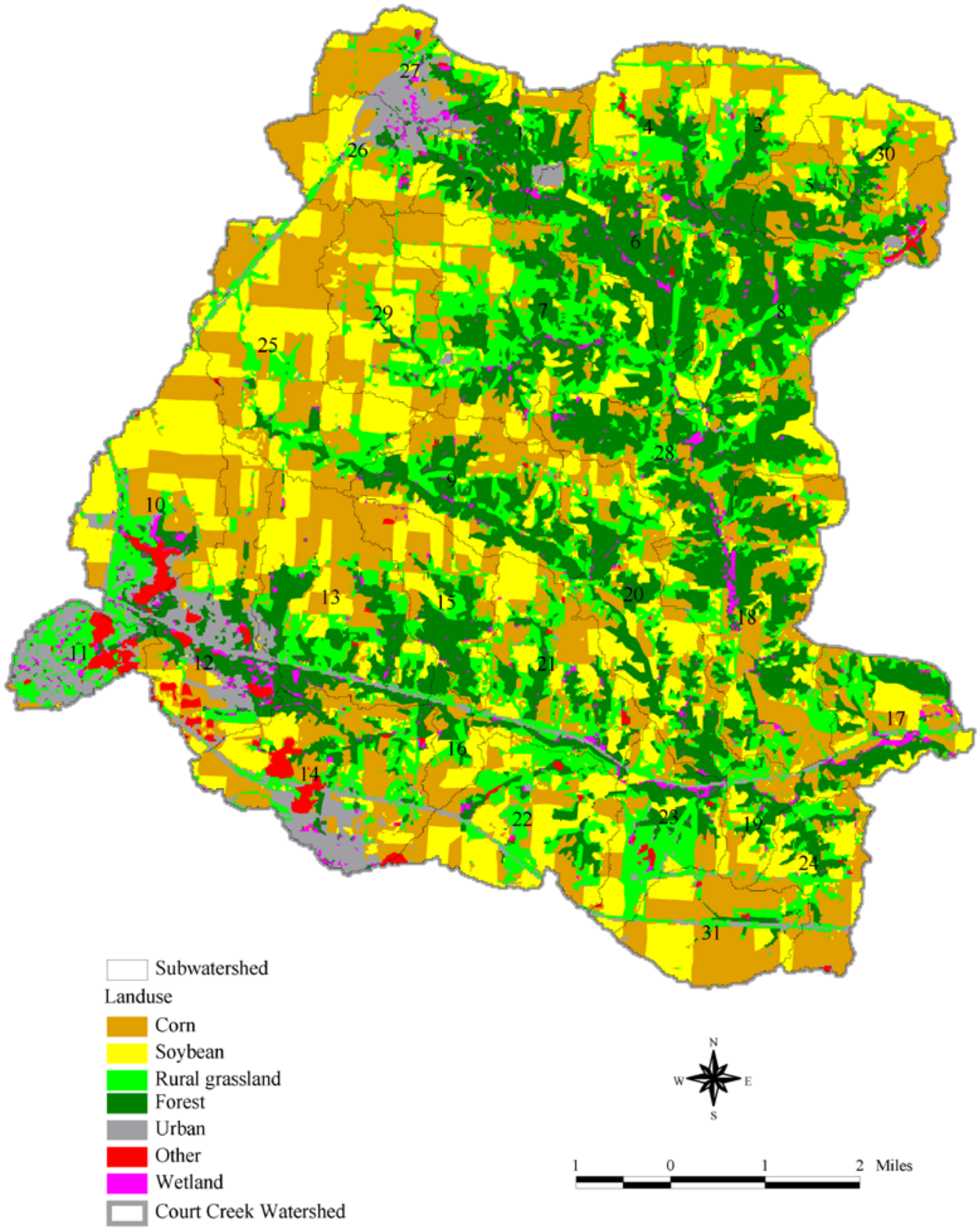


Figure 4-5. Land use in the Court Creek watershed

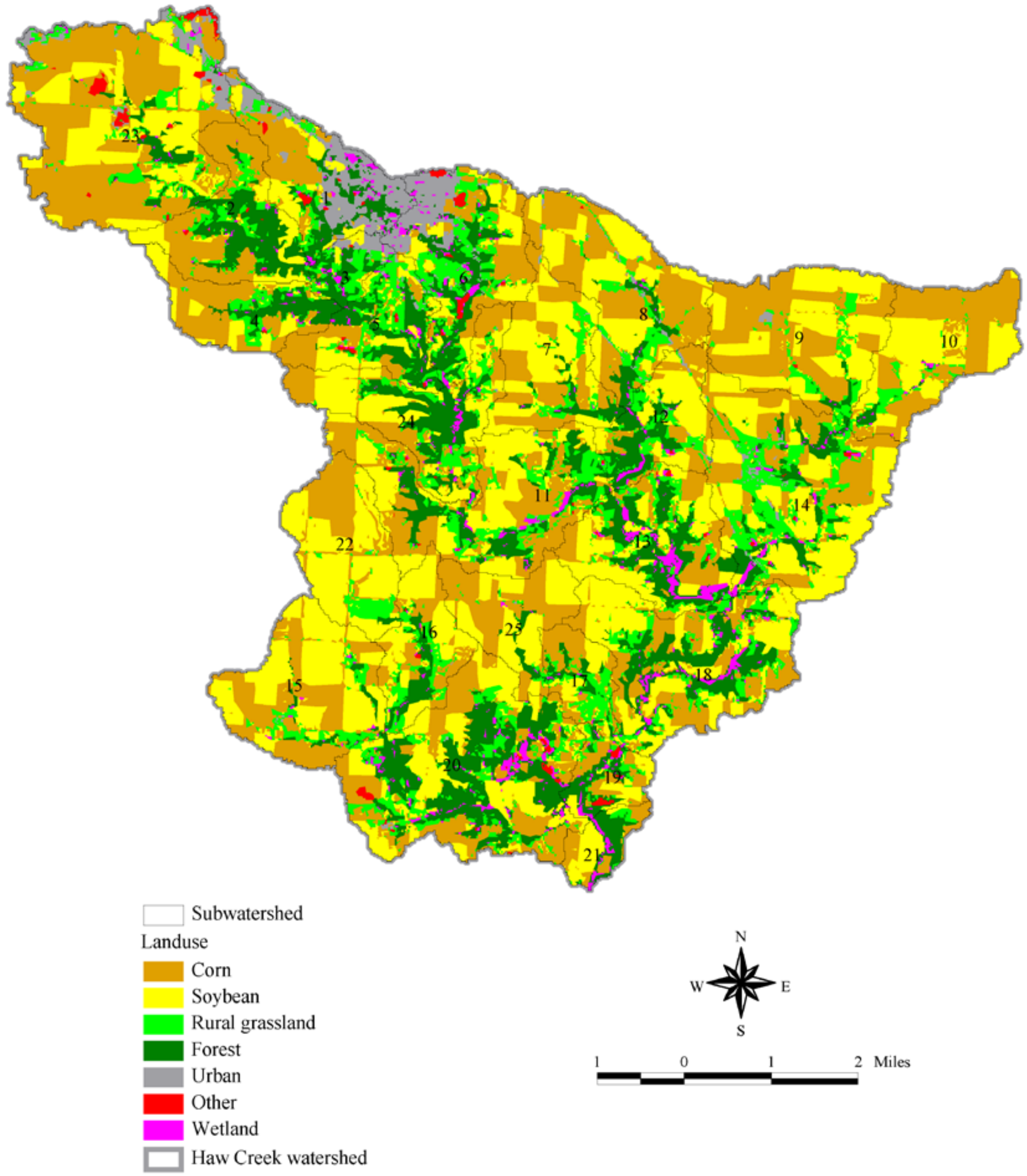


Figure 4-6. Land use in the Haw Creek watershed

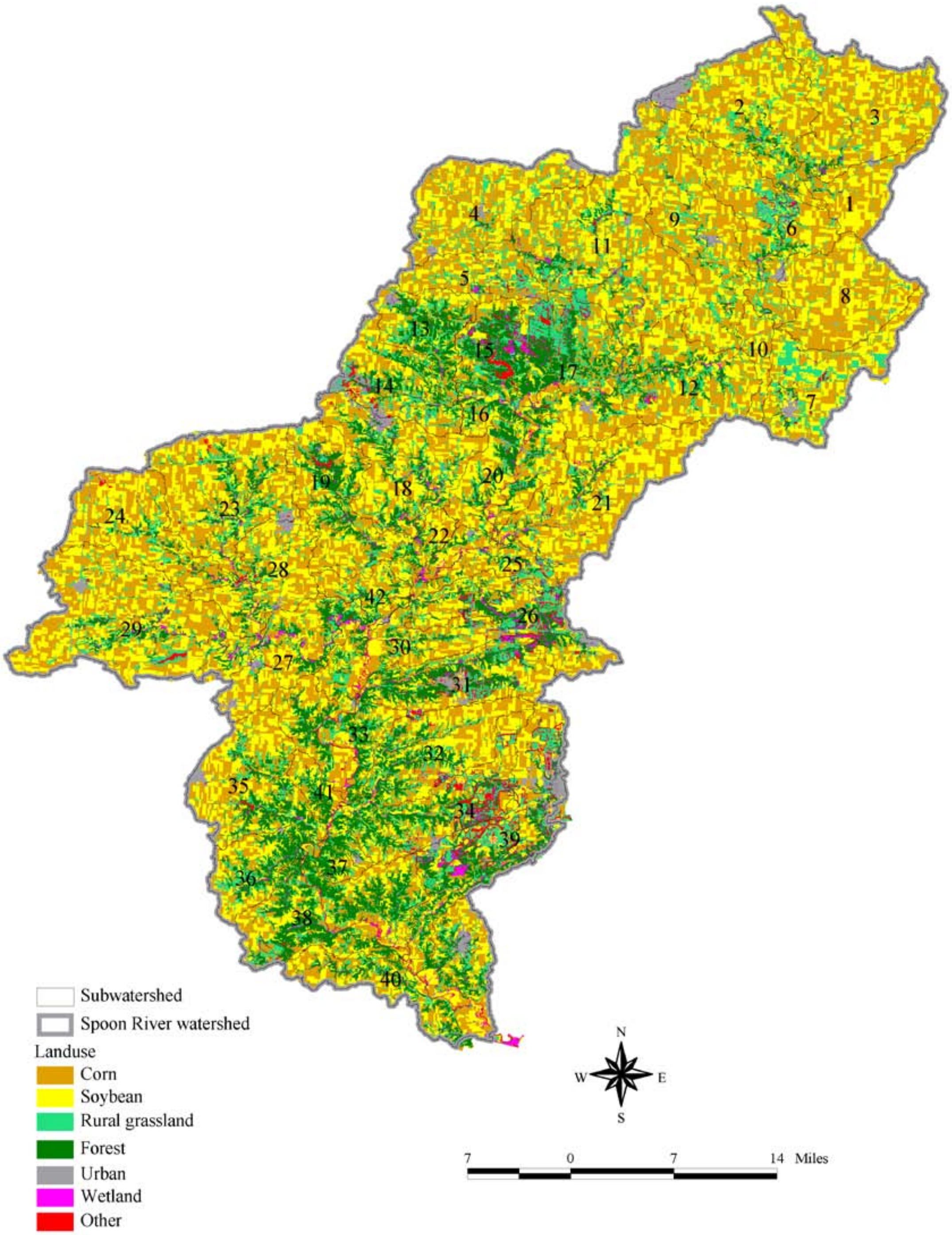


Figure 4-7. Land use in the Spoon River watershed

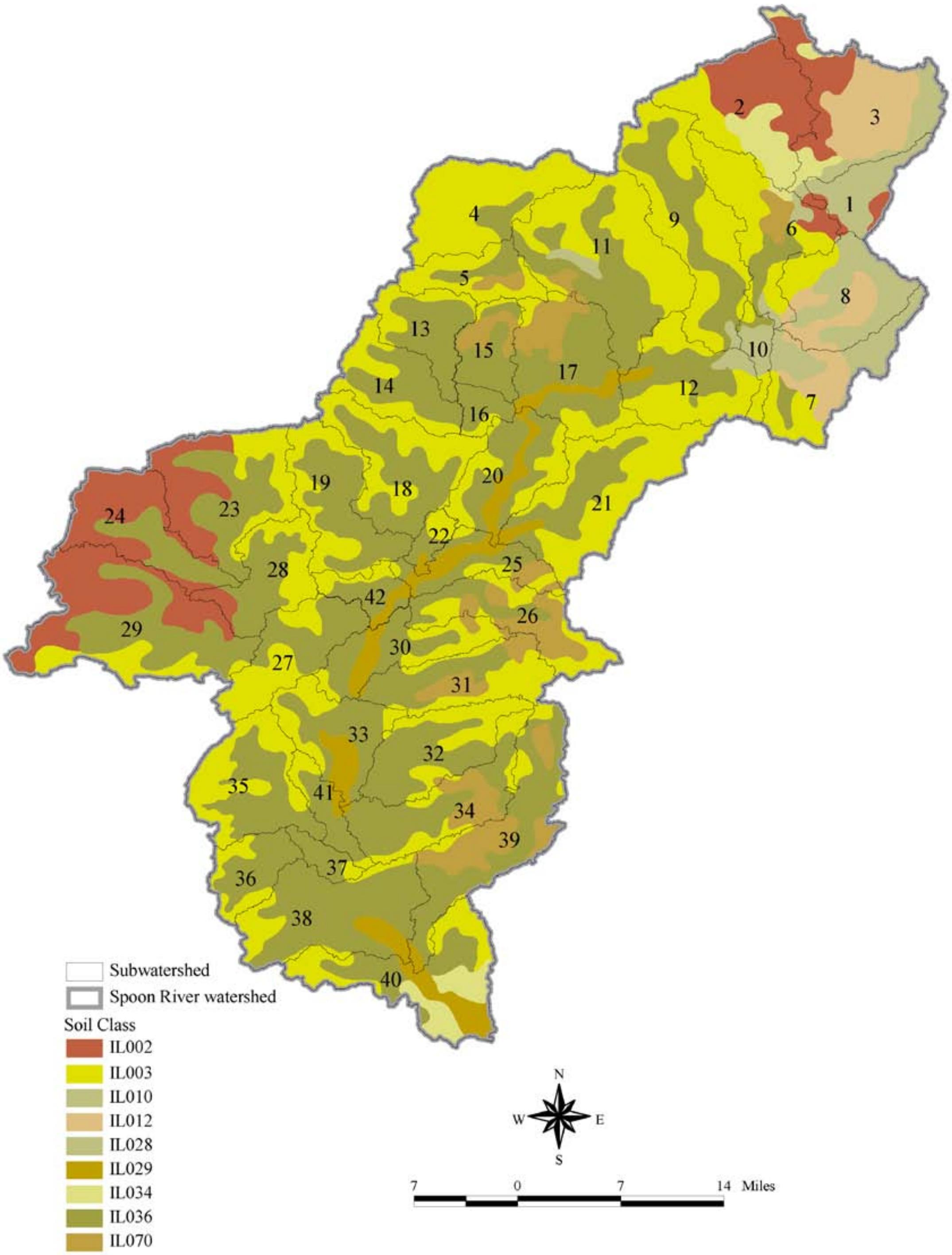


Figure 4-8. Soil types in the Spoon River watershed

Model Development

Based on the topographic and hydrographic data, the watersheds were subdelineated into smaller hydrologically-connected subwatersheds and stream reaches, and respective outlets. The Automatic Delineation procedure in BASINS with an option of 'burning in' existing streams was used. Subdelineation was done for representing spatially variable physical and other characteristics of a watershed in the HSPF model. The Court, Haw, and Spoon River watersheds were subdivided into 31, 25, and 42 subwatersheds, respectively (figures 3-2, 3-3, and 3-4). During subdelineation, outlets were specified in the models corresponding to the streamflow gaging/water quality monitoring stations on the North Creek (ISWS302), Court Creek (ISWS301), Haw Creek (ISWS303), and the USGS streamflow gaging station at Seville (USGS05570000) in the Spoon River watershed (figures 3-2, 3-3, and 3-4). The subwatersheds were further subdivided into Hydrologic Response Units (HRUs) based on land use, soil, and climate to account for the spatial variability of a basin's physical and hydrologic characteristics at a finer scale. An HRU is an area within a watershed that is expected to have a similar hydrologic response to input of precipitation and evapotranspiration. Each HRU has a set of parameter values that must be determined through the calibration process to define runoff characteristics as well as loading of various constituents from that HRU. In the Court Creek watershed HSPF model, climate data from the Court Creek and Galesburg precipitation gages were input to different subwatersheds based on the proximity. Similarly, in the Haw Creek HSPF model data from the Haw Creek and Galesburg gages were input to various subwatersheds. In case of Spoon River watershed HSPF model, data from all ten MRCC stations were specified for different subwatersheds based on their proximity to the gages.

Model of the Court Creek watershed was developed first using two years (WY2001-WY2002) streamflow and sediment concentration data from the ISWS301 streamflow gage/WQ station on the Court Creek. Calibrated model parameters from this model were then used to populate the models of the Haw Creek and Spoon River watersheds. No further calibration of these two models was performed. Haw Creek watershed model was run for the same two year period as Court Creek watershed model and the model results were compared with the observed data from the ISWS303 gage on the Haw Creek. Since long-term climate and streamflow data were available for the Spoon River watershed, this model was run for 1972-1995 period using data from the USGS05570000 at Seville.

Modeling Results

Values of a large number of HSPF model parameters can not be obtained from field data and need to be determined through model calibration exercise. The Court Creek watershed model was calibrated to assign best possible parameter values to each HRU and stream reach so that the model simulated daily streamflows and pollutant concentrations similar to the values observed at the gaging/monitoring stations. Calibration of the hydrologic component of the model was followed by the calibration of the water quality component for the sediment concentration. Model was run for hourly time step. For the two year calibration period of WY2001-WY2002, percent volume error between the model simulated and observed streamflows at gages ISWS301 on the Court Creek and ISWS302 on the North Creek were 1.2% overestimation, and 3.5%

underestimation, respectively. Comparisons of the daily streamflows simulated by the model for WY2001-WY2002 period with those observed at gages ISWS301 and ISWS302 are shown in figures 4-9a and 4-9b. The performance of this preliminary model is promising and overall the simulated streamflows follow the similar trend as the observed values. The timings and shape of the simulated streamflow hydrographs resemble the observed ones but some peak flows were underestimated by the model. In this study the model was not calibrated to match the individual stormflow events, rather it was calibrated to fit the long-term and daily data over the two year calibration period. Also, data from only two precipitation gaging stations, both near the boundary of the watershed (figure 4-2), were used to spatially represent the precipitation over the entire watershed. It is possible that rainfall measured for a particular event at one of the gages did not represent the rainfall that actually occurred in different parts of the watershed, thereby resulting in discrepancies between the observed and simulated streamflow hydrographs. Thus, more precipitation gaging stations will help improve the performance of the hydrologic model by more accurately simulating the stormflow hydrographs.

For sediment simulation by the model in the Court Creek watershed, parameters controlling soil erosion on the surface and sediment transport in the stream channel were calibrated. Comparison of sediment concentration simulated by the model and those observed at gages ISWS301 and ISWS302 are shown in figure 4-10 for the WY2001-WY2002 period. The simulated values generally followed the same trend as the observed sediment concentration values at both gages. Since most soil erosion occurs during extreme runoff events, some high sediment concentrations were underestimated by the model as a result of poor estimation of the stormflow peaks by the model during hydrologic simulations.

Streamflow and sediment concentration simulation results from the Haw Creek watershed model are compared with the observed data as shown in figures 4-11 and 4-12, respectively. Similar results from the Spoon River watershed model are shown in figures 4-13 and 4-14. In this preliminary phase, the performances of these two models were similar to the calibrated model of the Court Creek watershed. Performance of these models can be improved in the future if climate, streamflow, and water quality data are available for more stations and longer time period to improve the model calibration.

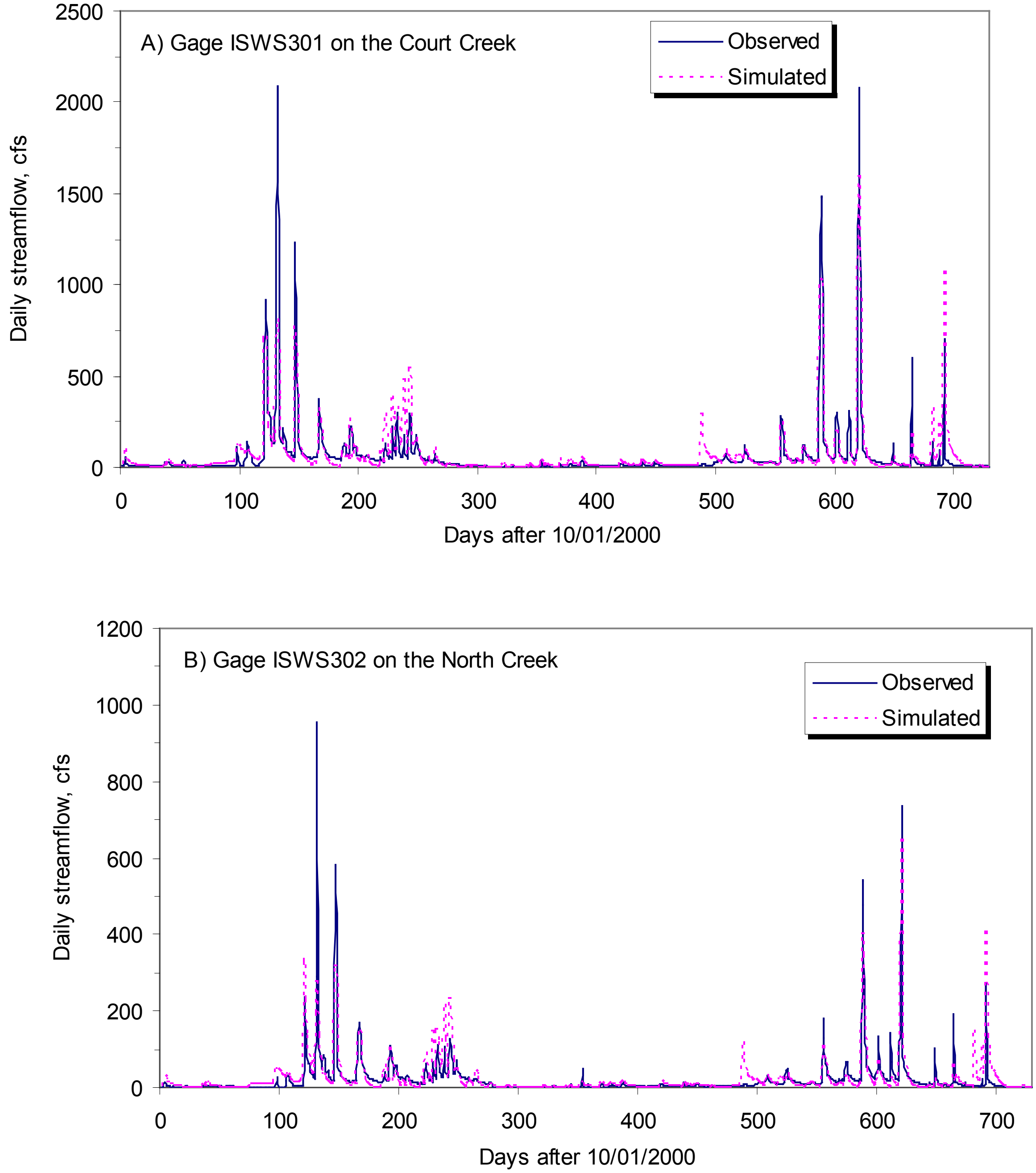
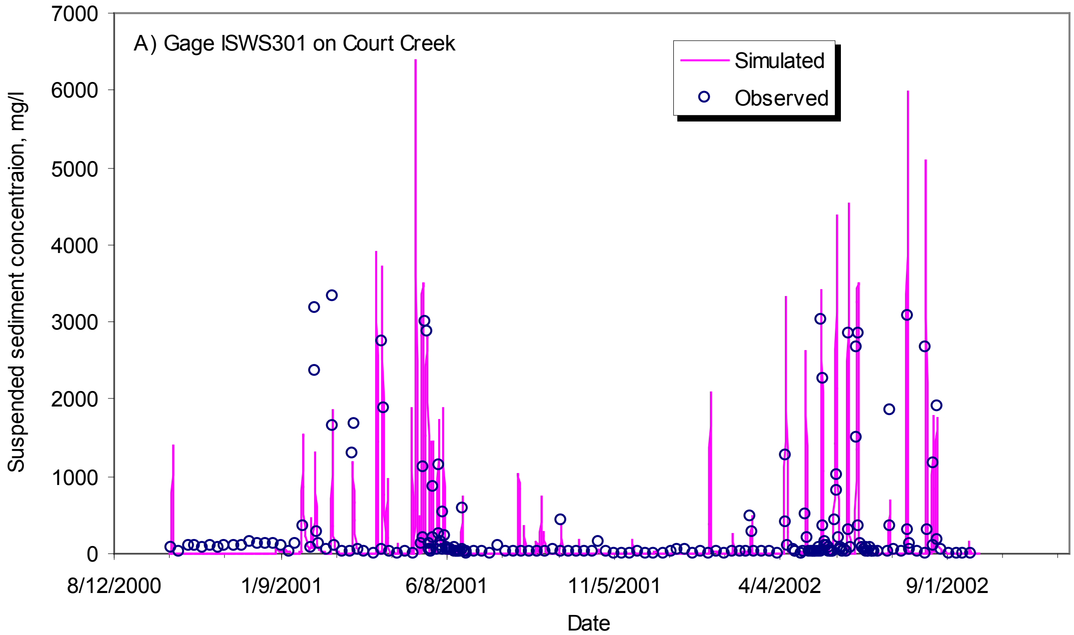


Figure 4-9. Results of model calibration for streamflow simulation for the Court Creek watershed



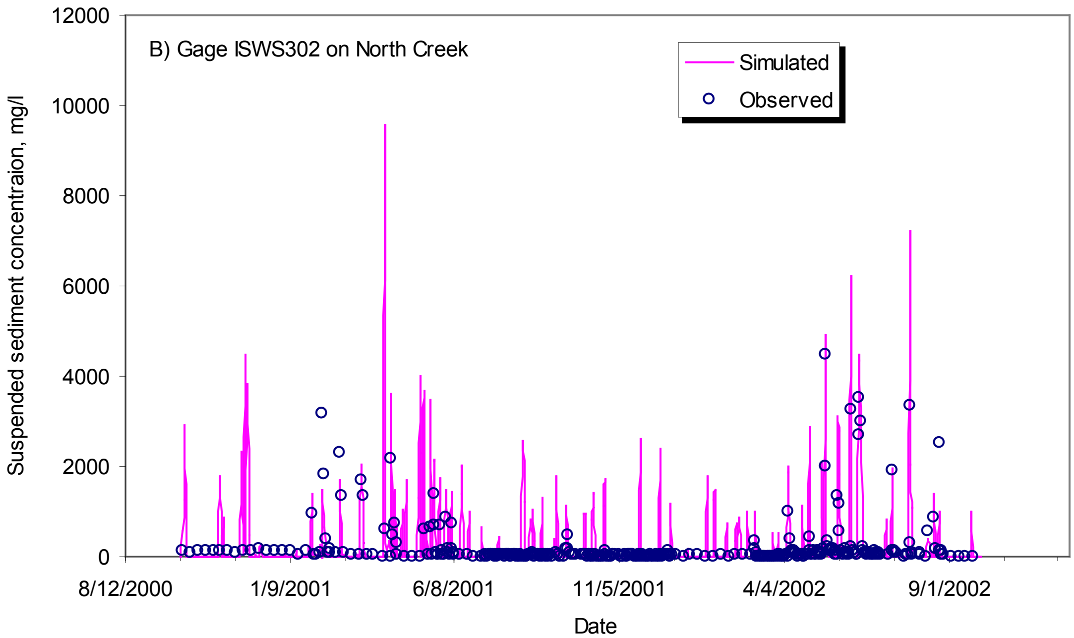


Figure 4-10. Preliminary results of model calibration for suspended sediment concentration simulation for the Court Creek watershed

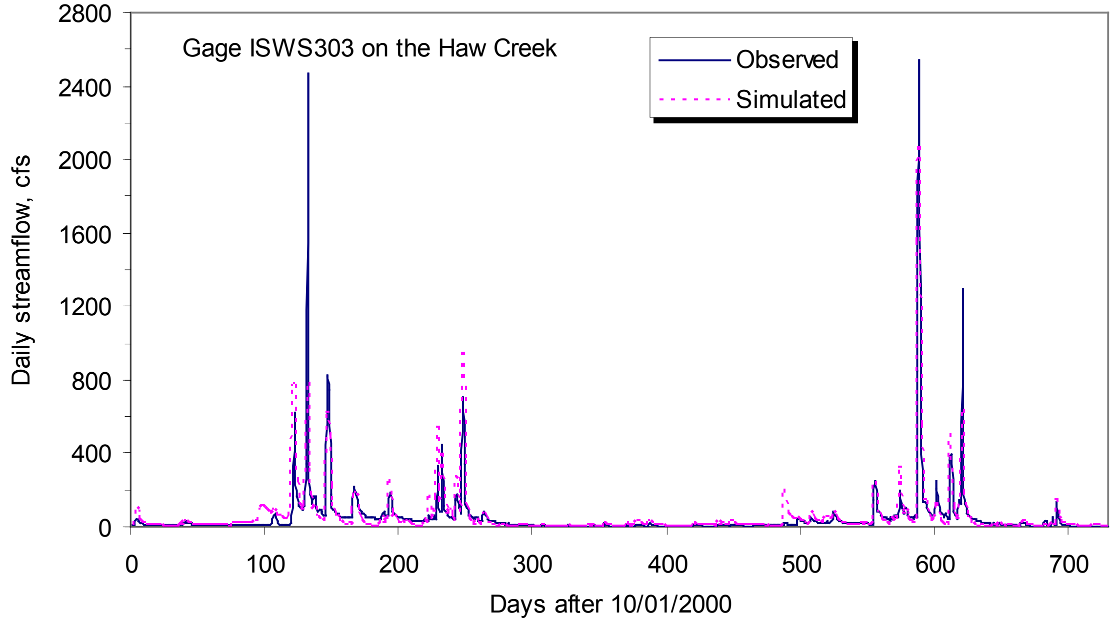


Figure 4-11. Comparison of observed and simulated streamflow by the Haw Creek watershed model developed using the calibrated parameters from the Court Creek watershed model

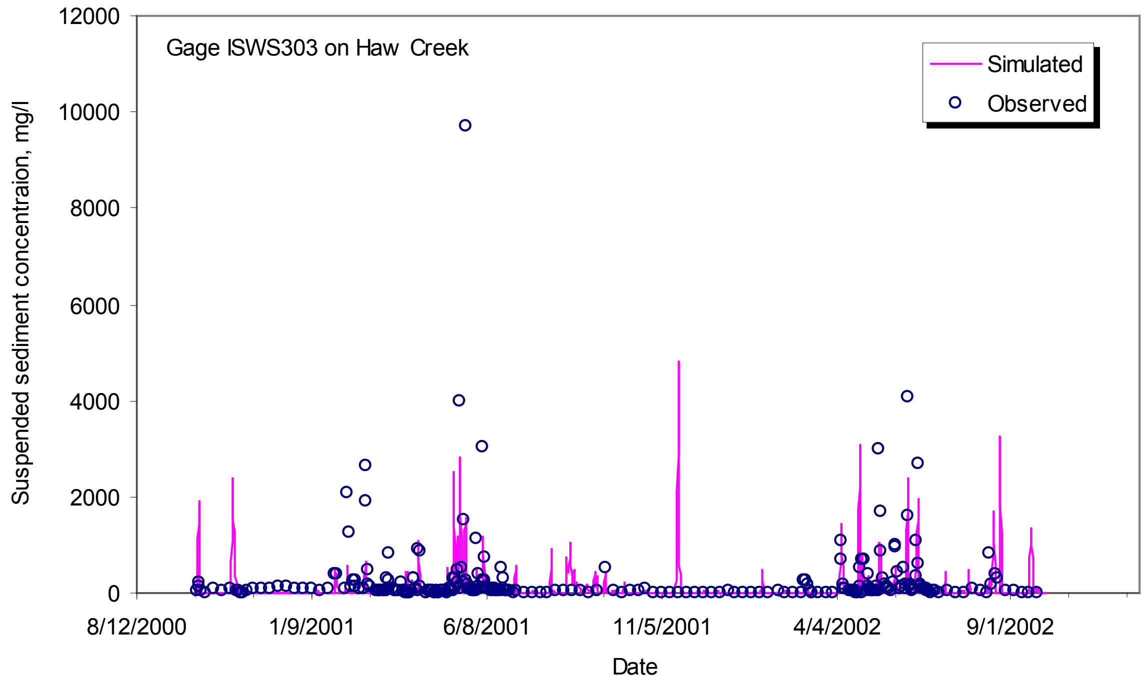


Figure 4-12. Preliminary results for suspended sediment concentration from the Haw Creek watershed model developed using the calibrated parameters from the Court Creek watershed model

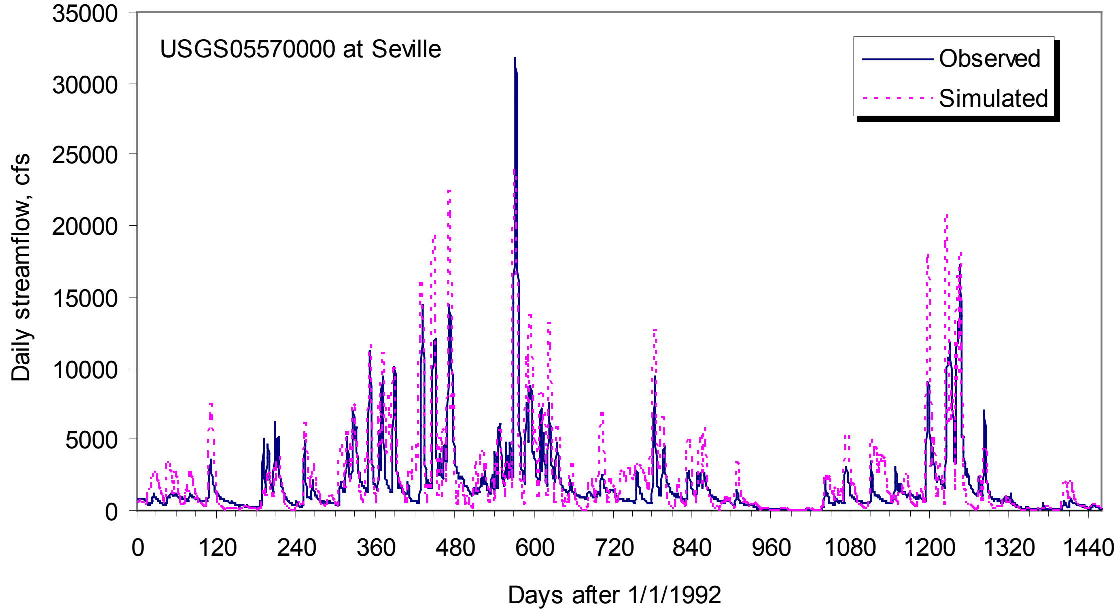


Figure 4-13. Comparison of observed and simulated streamflow simulation by the Spoon River watershed model developed using the calibrated parameters from the Court Creek watershed model

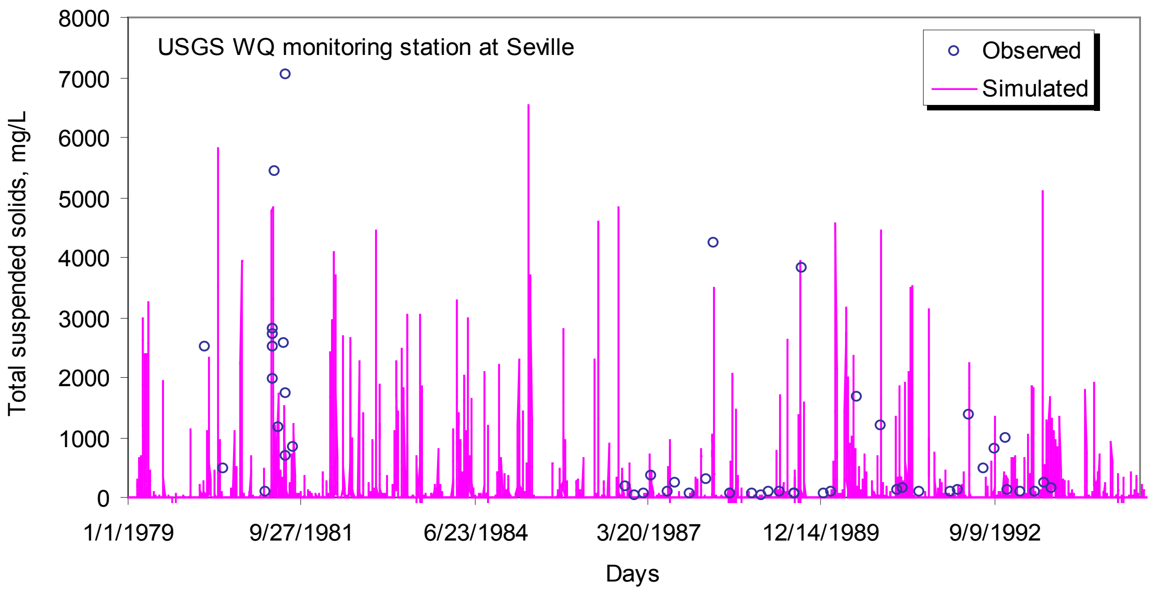


Figure 4-14. Preliminary results for suspended sediment concentration from the Spoon River watershed model developed using the calibrated parameters from the Court Creek watershed model

5. Analyses and Discussion

Sediment Loadings

Based on sediment records since 1980, the Illinois River on the average receives approximately 12 million tons of sediment annually from tributary streams (Demissie et al., 2004). About 55 percent of the sediment delivered to the river (6.7 million tons) is deposited in the river, backwater lakes, and side channels along the river. Most of this sediment is generated in the tributary watersheds to the Lower Illinois River, with the Spoon and LaMoine River watersheds as the highest per unit area generators of sediment among the major tributaries. The smaller tributaries draining directly to the river also contribute significant sediment. Controlling the erosion processes that are producing excessive sediment and reducing sediment delivery to the Illinois River will be a long-term effort, since sediment storage and mobilization along major rivers is a slow process. It will take some time to flush the sediment already in the system. In the initial phase of a restoration project, the major goal is to stabilize the system so that the erosion process is not accelerating and generating more sediment. The readjustment processes will take a number of years to reach a dynamic equilibrium condition where the natural processes of erosion and sedimentation are in balance. The long-term goal of the Illinois River restoration projects is to reach such a state where continued excessive sedimentation is eliminated.

To assess these processes, long-term monitoring is needed. The CREP program has been collecting sediment data at selected watersheds to supplement other monitoring programs. The data collection for the CREP program started in 1999 and has generated ten years of data. The annual sediment load data for each of the five CREP monitoring stations have been presented in chapter 2. Because of the short duration of data collection program, this data cannot yet be used to assess long-term trends. However, the short-term trends are shown in figure 5-1, where the sediment load per unit area was normalized by the runoff in inches to account for the variability of runoff from year to year. Even though the extreme wet year 2008 stands out as the year with the highest yield (for Panther and Cox Creeks), the general trend for the other stations is a gradual decrease or no trend. Again, these are short term trends and any major climatic or hydrologic variability in the coming year could change the trends, as illustrated with the influence of 2008 on Panther and Cox Creeks. As we continue the monitoring program, the trends will be more clear and reliable as the duration of the monitoring period increases.

The data were also compared with historical data collected by the USGS for small watersheds in the Illinois River basin as shown in figure 5-2. As shown in the figure, the CREP dataset is consistent with the older dataset and will be used to develop improved sediment delivery estimates for small watersheds in the Illinois River basin and improve our assessment and evaluation capability.

To assess long-term trends, data collected by the USGS and ISWS since 1980 were used to compute sediment delivery for the major tributaries to the Lower Illinois River. For the USGS data, sediment delivery from the three major tributary watersheds to the Lower Illinois River was computed for the downstream gaging stations near the outlet of the watersheds using the same methods developed by Demissie et al. (2004). The outflow of sediment from the Illinois River basin is measured at Valley City. The sediment loads and the corresponding water discharges for

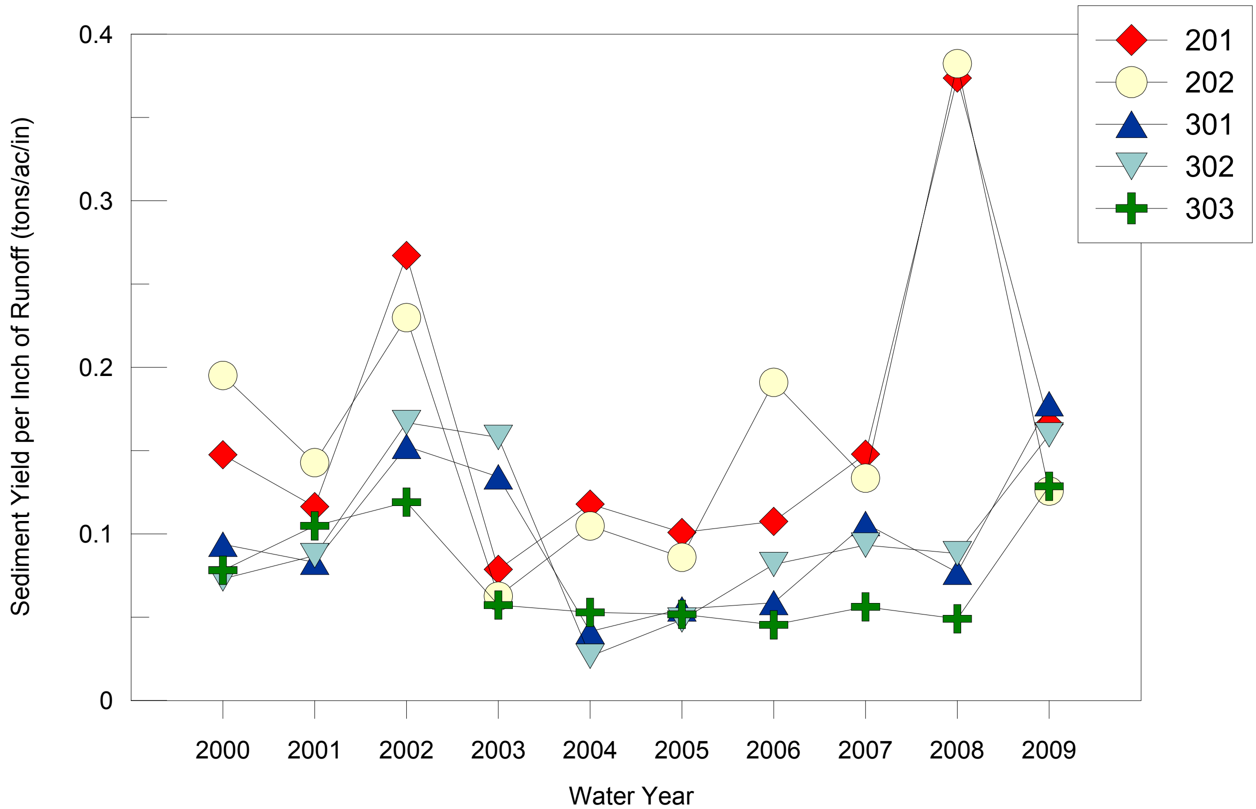


Figure 5-1. Variability of sediment yield per inch of runoff for CREP monitoring stations

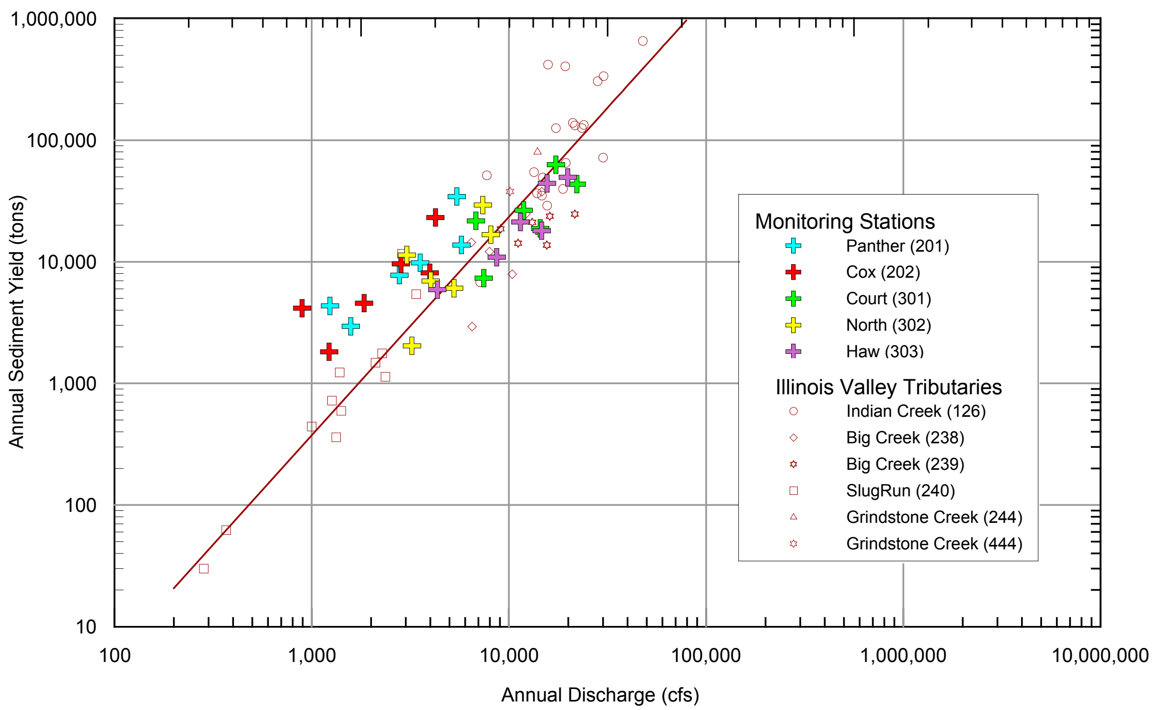


Figure 5-2. Comparison of sediment load from CREP monitoring stations with historical sediment data for small watersheds by the USGS

five-year increments since 1980 are shown in figure 5-3. The period 1991-1995 generally shows the highest sediment delivery to the Illinois River and the highest outflow from the Illinois River for the period under consideration, primarily because of the 1993 major floods. Since that period, sediment delivery from the tributaries and outflow from the Illinois River have generally been decreasing. If these trends continue into the future, there would be significant reduction in sediment delivery to the Illinois River.

Similar trends are also observed from the analyses of sediment data collected by the ISWS for the Benchmark Sediment Monitoring Program for Illinois Streams. The Benchmark Sediment Monitoring Program has been collecting weekly sediment data at selected monitoring stations throughout the state since 1980 (Allgire and Demissie, 1995). The data collected over that last 25 years have been processed and analyzed to observe trends in sediment concentrations and loads (Crowder et al., 2008). Figures 5-4 to 5-6 show the trend in sediment load since 1980 for the Spoon River at Long Mills, LaMoine River at Ripley, and Sangamon River at Monticello, respectively. All three stations show a decreasing trend since 1980.

Nutrient Loadings

To assess long-term trends in nutrient loadings as conservation practices are implemented, the state has been collecting nutrient data at the five CREP monitoring stations where sediment data have been collected since 1999. Even though there are some low and high nutrient load years, the dataset is not long enough to assess long-term trends in nutrient loading. However, the short-term trends based on the data collected so far are shown in figures 5-7 and 5-8 for nitrate-N and total phosphorous yields per inch of runoff. The nutrient yield values were divided by the inches of runoff to partly remove the effect of the variability of runoff from year to year. As shown in figure 5-7, the nitrate-N loads do not show any significant trend except for the jump in yield from 2000 to 2001 for stations 201 and 202. Figure 5-8 shows a slight decreasing or no trend for total phosphorous for stations 301, 302, and 303, similar to the one observed for sediment.

Long-term data collected by the Illinois EPA as part of their Ambient Water Quality Monitoring Network can, however, provide a fair indication of the general long-term trend in nutrient delivery to the Illinois River. Figure 5-9 shows annual nitrate-N yields in tons per square mile from the three major tributaries of the Lower Illinois River (Spoon, Sangamon, and LaMoine Rivers). Nitrate-N represents about 70 percent of the total nitrogen load in most of Illinois' agricultural watershed, and thus is a good surrogate for total nitrogen load. As can be seen in the figure, the nitrate yields can range from almost zero during a drought year like 1989 to a high of about 11 tons per square mile during a major wet period like the 1993 flood year. Therefore, climatic factors do play a major role in nutrient transport and delivery. The most important observation that can be made for the figure is the slow decreasing trend of nitrate-N yield from the major tributary watersheds. Even though it is very difficult to measure how much impact the CREP program might have had, it is obvious that conservation practices in these watersheds, where most of the CREP lands are located, are making a difference in nitrogen delivery to the Illinois River.

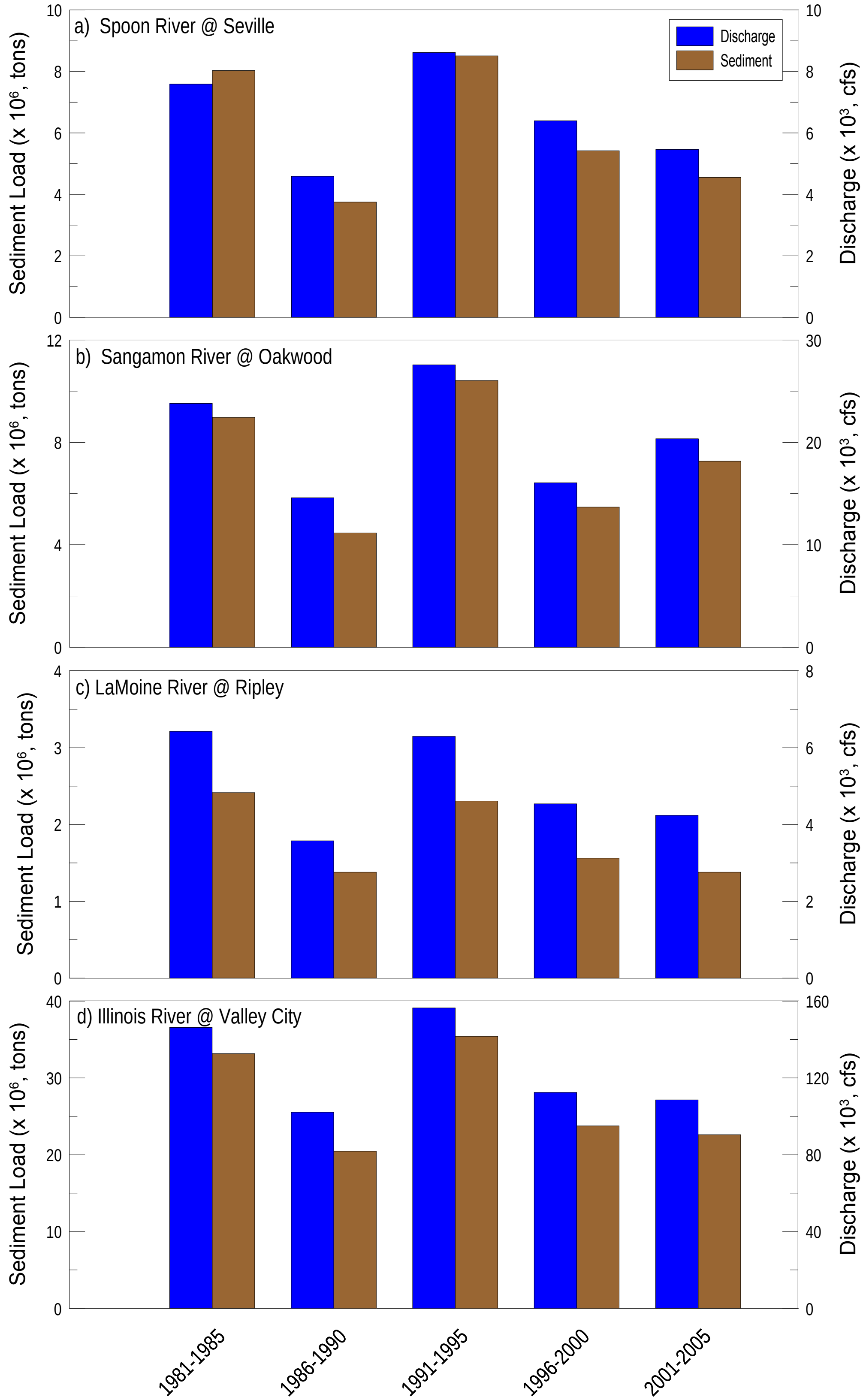


Figure 5-3. Sediment delivery from the three major tributary watersheds to the Illinois River and sediment outflow from the Illinois River at Valley City

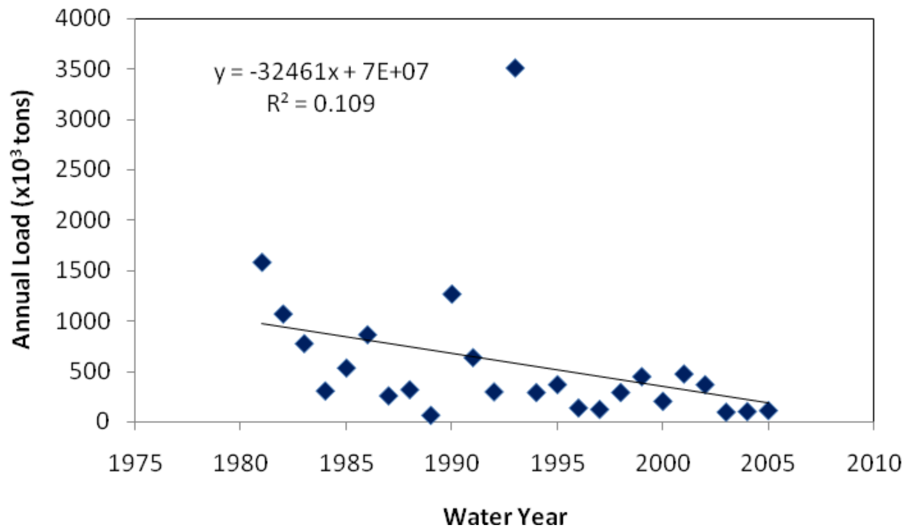


Figure 5-4. Trends in sediment load at Spoon River at London Mills (after Crowder et al., 2008)

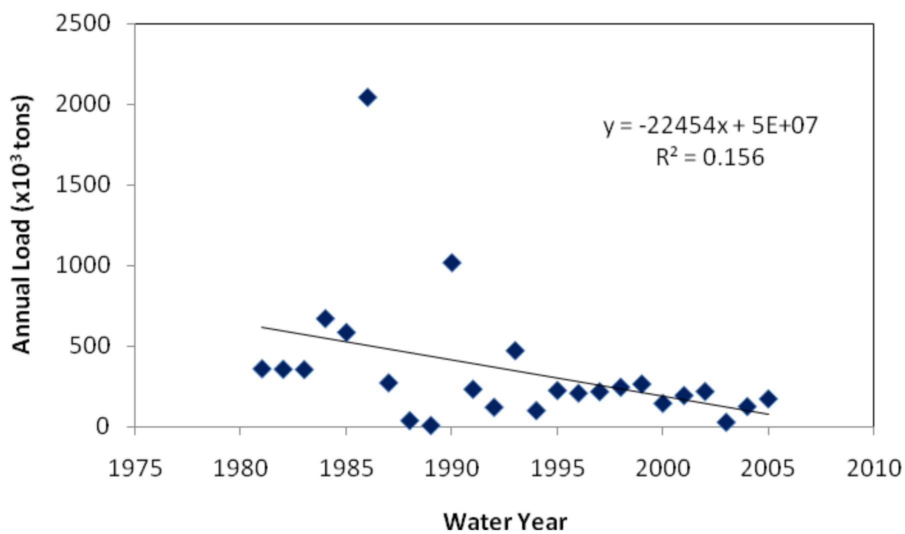


Figure 5-5. Trends in sediment load at LaMoine River at Ripley, IL (after Crowder et al., 2008)

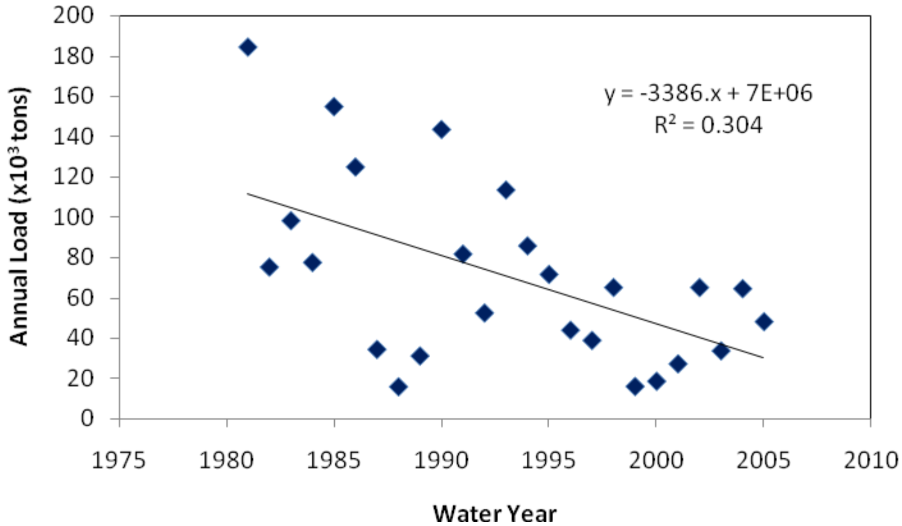


Figure 5-6. Trends in sediment load at Sangamon River at Monticello, IL (after Crowder et al., 2008)

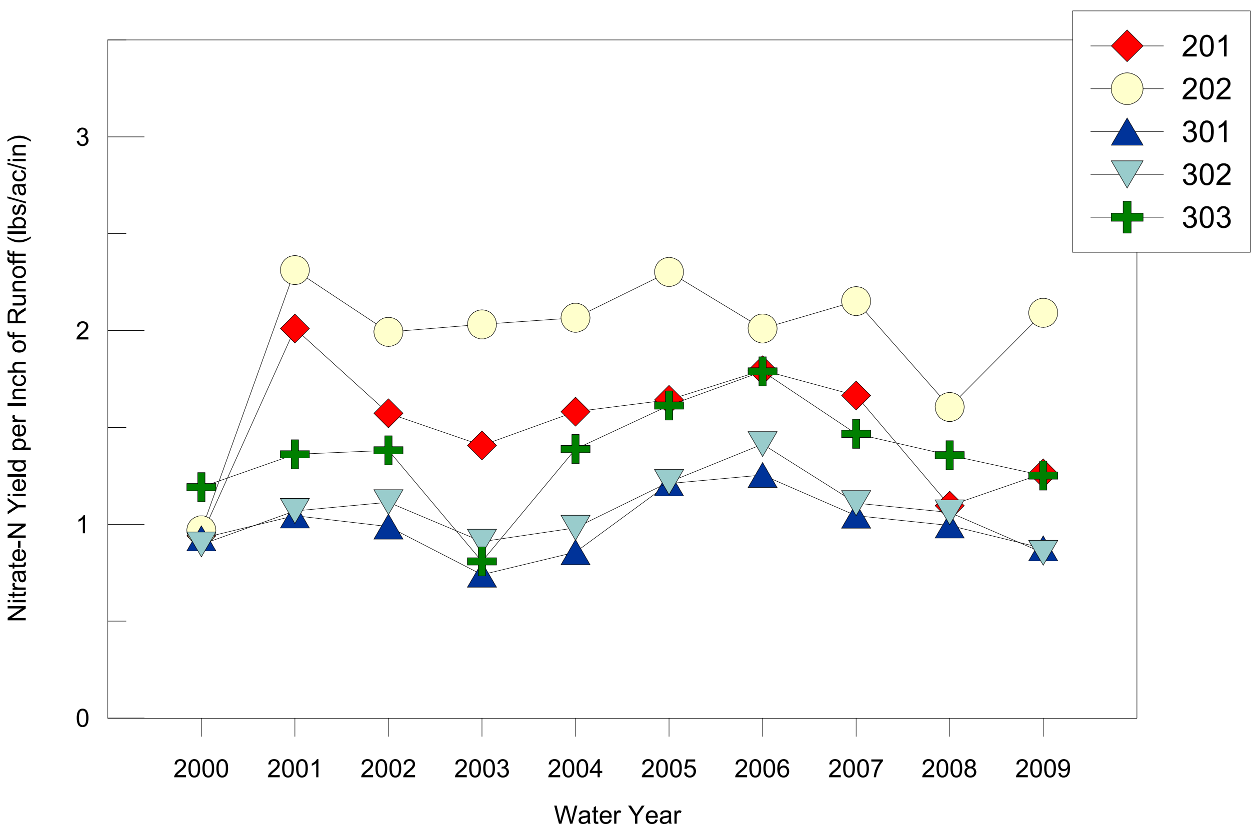


Figure 5-7. Variability of nitrate-N yield per inch of runoff for CREP monitoring stations

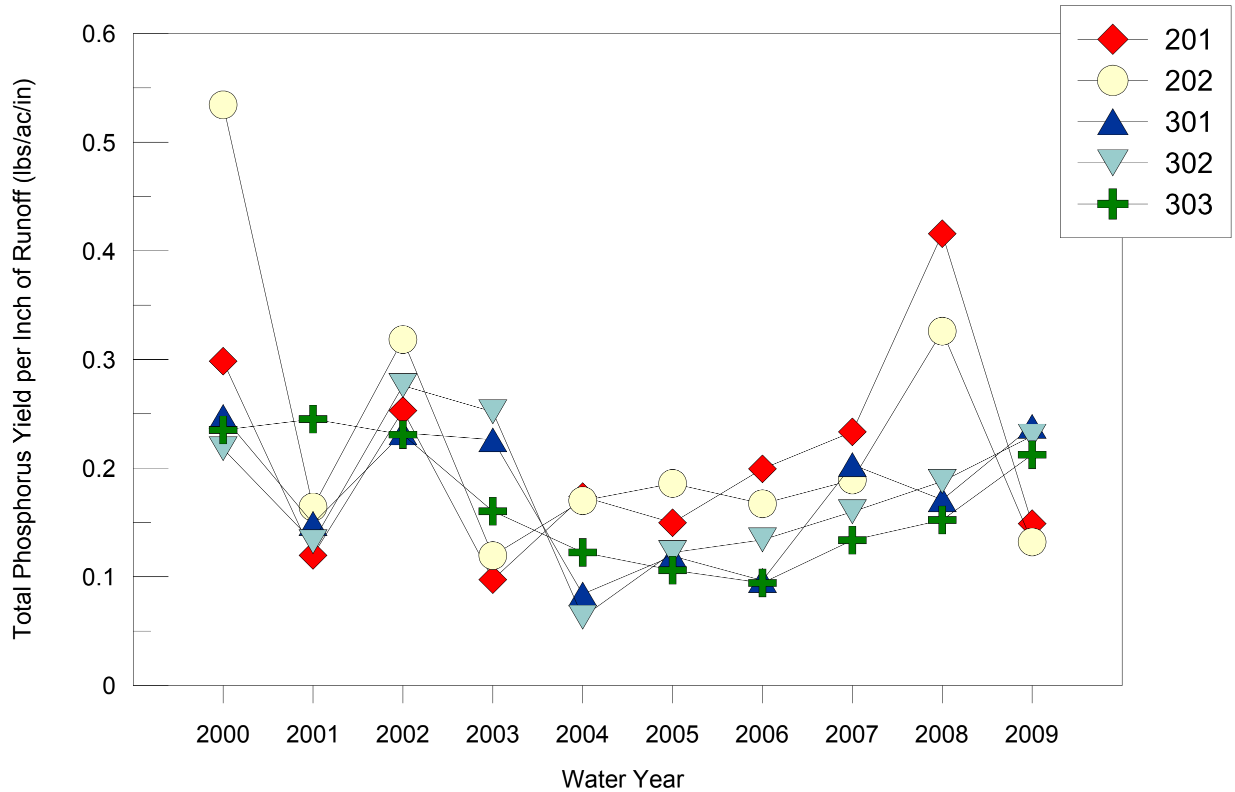


Figure 5-8. Variability of total phosphorous yield per inch of runoff
for CREP monitoring stations

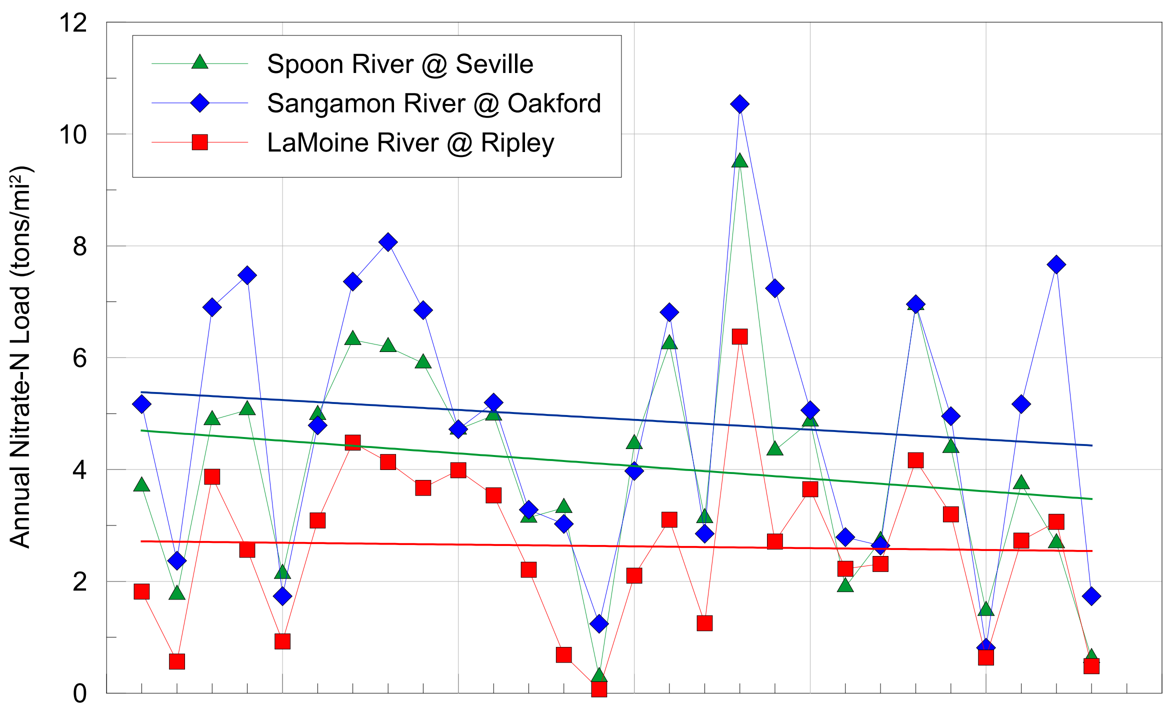


Figure 5-9. Annual nitrate-N loads for the three major tributary watersheds
to the Lower Illinois River

Figure 5-10 shows the total phosphorous yield from the same three tributary watersheds discussed in the previous figure. Annual phosphorous delivery ranges from a low of almost zero during the drought year 1989 to a high of almost one ton per mi^2 for the extreme wet year of 1993. The data also show how dependant phosphorous delivery is on climatic variability. Similar to the trends to the nitrate delivery, there is a slow but gradual decreasing trend in phosphorous yield from the Spoon and LaMoine Rivers, while there is a gradual increase from the Sangamon River.

The trends in nutrient loads from the major tributaries are reflected in nutrients transported by the Illinois River. Analyses of the data from the two downstream monitoring stations, Havana and Valley City, are shown in figure 5-11 for nitrate-N and total phosphorous, respectively. In general, the trend is a gradual decrease to no increase. These observations are extremely important as to nutrient delivery from Illinois streams to the Mississippi River and eventually to the Gulf of Mexico. Illinois had been identified as one of the major sources of nutrients to the Gulf of Mexico, and the fact that nutrient delivery from Illinois has not increased and is gradually decreasing is good news not only to Illinois but to the Gulf of Mexico, too.

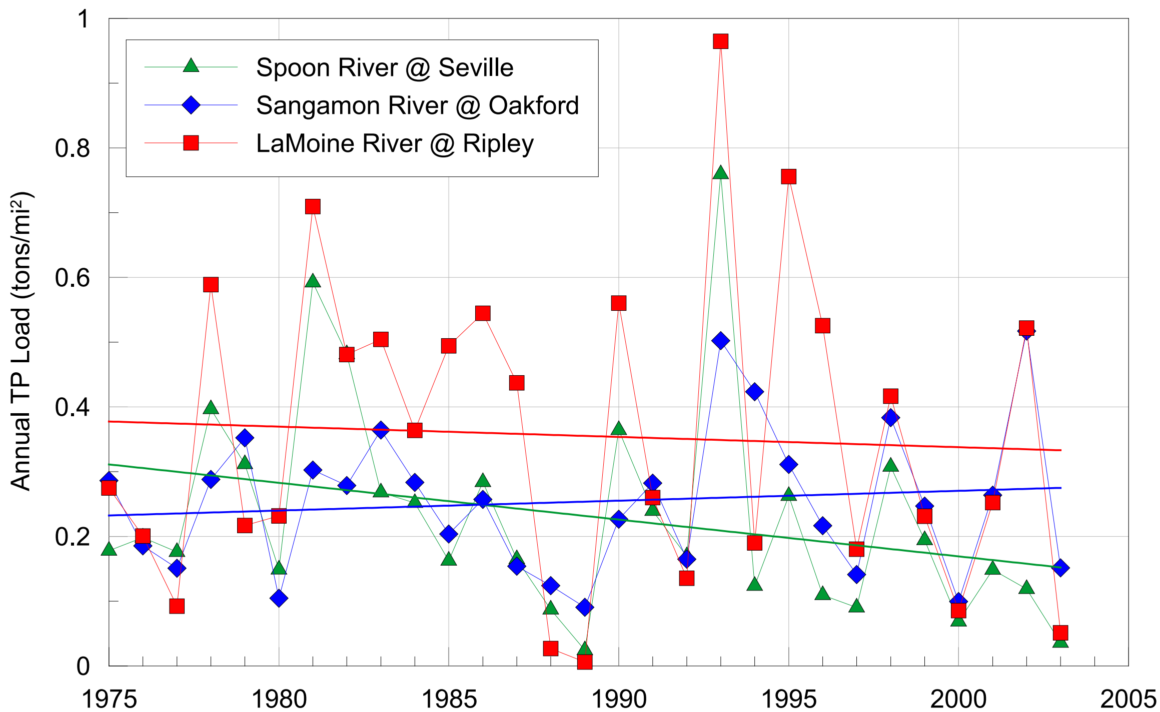


Figure 5-10. Annual total phosphorous loads for the three major tributary watersheds to the Lower Illinois River

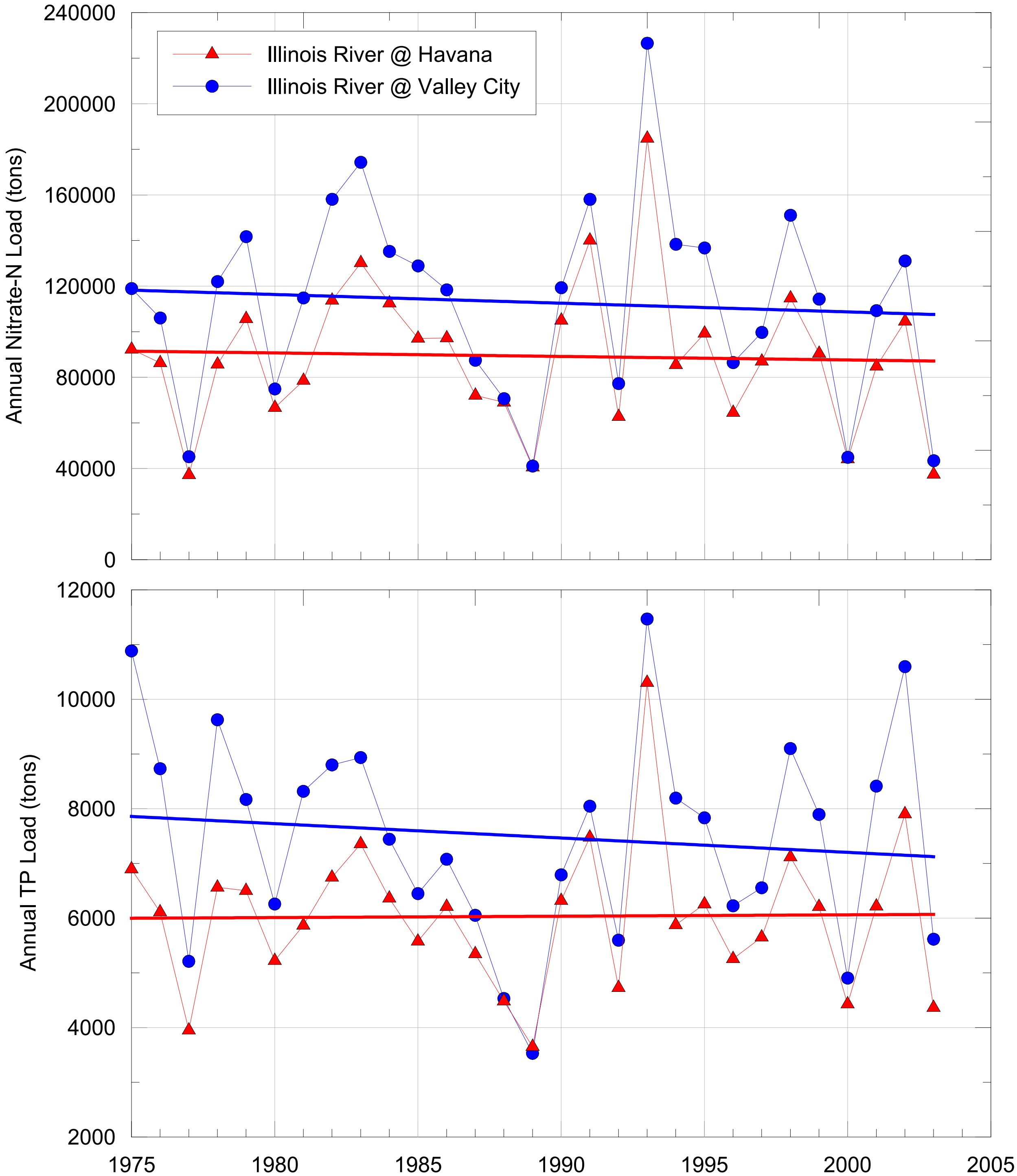


Figure 5-11. Nitrate-N and total phosphorous loads along the Lower Illinois River

6. Summary and Conclusions

As outlined in the Illinois River Basin Restoration Plan, the alternative of no-action in the Illinois River watershed will result in increased sediment delivery to the Illinois River and habitats and ecosystem would continue to degrade. However, recent data indicate that both sediment and nutrient delivery to the Illinois River have either stabilized or decreased as a result of implementation of conservation practices in the watershed. With the knowledge that reduction in sediment delivery from large watersheds takes time to move through the system, the indication of stabilized sediment delivery shows progress is being made in restoring the Illinois River watershed. If the present trends continue for the next 10 to 15 years, sediment and nutrient delivery to the Illinois River will be significantly reduced, and lead to improved ecosystem in the river and tributary watersheds.

7. References

Allgire, R.L., and M. Demissie. 1995. *Benchmark Sediment Monitoring Program for Illinois Streams: Program Summary and Site Descriptions*. Illinois State Water Survey Circular 181.

Bicknell, B.R., J. C. Imhoff, J. L. Kittle, Jr., T. H. Jobes, and A. S. Donigian, Jr., 2001. Hydrological Simulation Program – FORTRAN (HSPF), User's Manual for version 12.0, USEPA, Athens, GA, 30605.

Demissie, M., L. Keefer, and J. Slowikowski, A. Russell, T. Snider, and K. Stevenson. 2001. Sediment and Nutrient Monitoring at Selected Watersheds within the Illinois River Watershed for Evaluating the Effectiveness of the Illinois River Conservation Reserve Enhancement Program (CREP). Illinois State Water Survey Contract Report 2001-12.

Demissie, M., R. Xia, L. Keefer, and N. Bhowmik. 2004. The Sediment Budget of the Illinois River. Illinois State Water Survey Contract Report 2004-13.

Demissie, M., and N.G. Bhowmik. 1986. *Peoria Lake Sediment Investigation*. Illinois State Water Survey Contract Report 371.

Demissie, M. R. Xia, L. Keefer, and N. Bhowmik. 2004. *The Sediment Budget of the Illinois River.* Illinois State Water Survey Contract Report 2004-13.

Knapp, H.V. 2005. Analysis of Streamflow Trends in the Upper Midwest Using Long-Term Flow Records. *Proceedings of the 2005 Water and Environmental Resources Congress*. American Society of Civil Engineers, May 15-19, 2005, Anchorage, AK.

Luman, D. and T. Weicherding. *Land Cover of Illinois: 1999-2000*. 1999 January 1999 [cited 2003 November 1, 2003]; Available from: http://www.agr.state.il.us/gis/index.html.

Ramamurthy, G.S., K.P. Singh, and M.L. Terstriep. 1989. *Increased Durations of High Flows Along he Illinois and Mississippi Rivers: Trends and Agricultural Impacts (Final Report)*. Illinois State Water Survey Contract Report 478.

Short, M.B. 1999. *Baseline Loadings of Nitrogen, Phosphorus and Sediments from the Illinois Watersheds*. Illinois Environmental Protection Agency, IEPA/BOW/99-020, Springfield, IL.

Singh, J., H. V. Knapp, Y. Lian, and M. Demissie. 2003. The Illinois River Basin Hydrologic Model. *Proceedings, 2003 Governor's Conference on the Management of the Illinois River System*. Oct. 2003, Peoria, IL, pp.73-84.

State of Illinois, Department of Natural Resources, 2002. Illinois Conservation Reserve Enhancement Program (CREP) 2002. Annual Report for Reporting Period October 2000 through September 2001, Springfield, IL.

U.S. Army Corps of Engineers. 2006. *(Draft) Illinois River Basin Restoration Comprehensive Plan with Integrated Environmental Assessment*. Rock Island District, Rock Island, IL.

USEPA, 2001. *Better Assessment Science Integrating Point and Nonpoint Sources –BASINS, Version 3.0*. User's Manual, EPA-823-B-01-001

The Bellrose Restoration Projects Monitoring Update

Overview

As suggested in the Conservation Reserve Enhancement Program (CREP) habitat monitoring program pilot study summary, one of the monitoring techniques utilized for CREP sites will be to conduct site visits and use visual technology and observations to evaluate the overall habitat quality of the practices. With this approach invasive species can be identified, as well as, documenting the return of desirable species. When appropriate resources are available other quantifiable results can be collected by conducting biological surveys, such as but not limited to: fish, mussel, and vegetation surveys.

Project Descriptions

The Sandra Miller Bellrose Nature Preserve, located in Logan County, Atlanta, Illinois, is approximately 106-acres and is owned by Ron and Sandra Bellrose (Lerczak 2000). The preserve consists of a 0.8-mile segment of Sugar Creek plus adjacent woodlands and fields on both sides (Fig 1). CREP and the Landowner Incentive Program (LIP) cost shared with other state and federal programs (Fig 2) to conduct instream (Fig 3), wetland (Fig 4), forest (Fig 5), and grassland (Fig 6) enhancement projects. These projects combined to create 400 acres that are permanently protected and restored in and around the nature preserve (Fig 2). The projects were implemented in the fall of 2007.

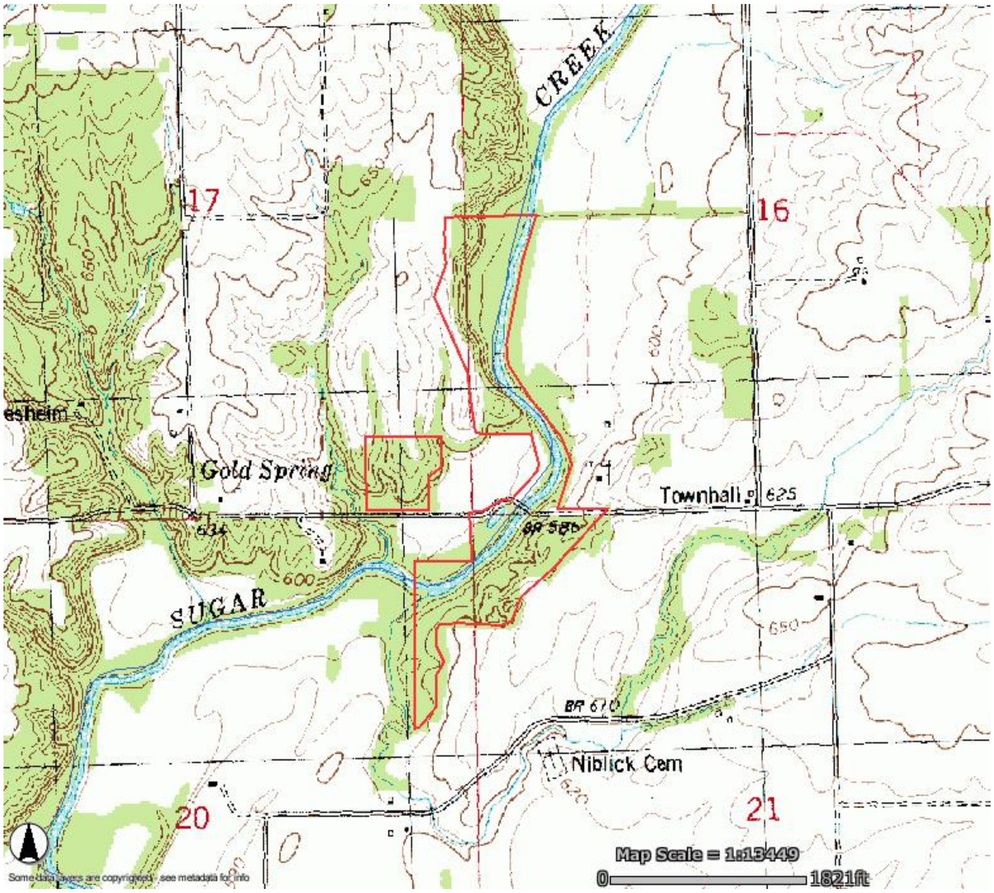


Figure 1. USGS Topographic Map of the Sandra Miller Bellrose Nature Preserve. The Bellrose Nature Preserve is outlined in red. The floodplain habitat of the preserve and Sugar Creek is also illustrated. This map was obtained through WIRT (Wetland Impact Review Tool).

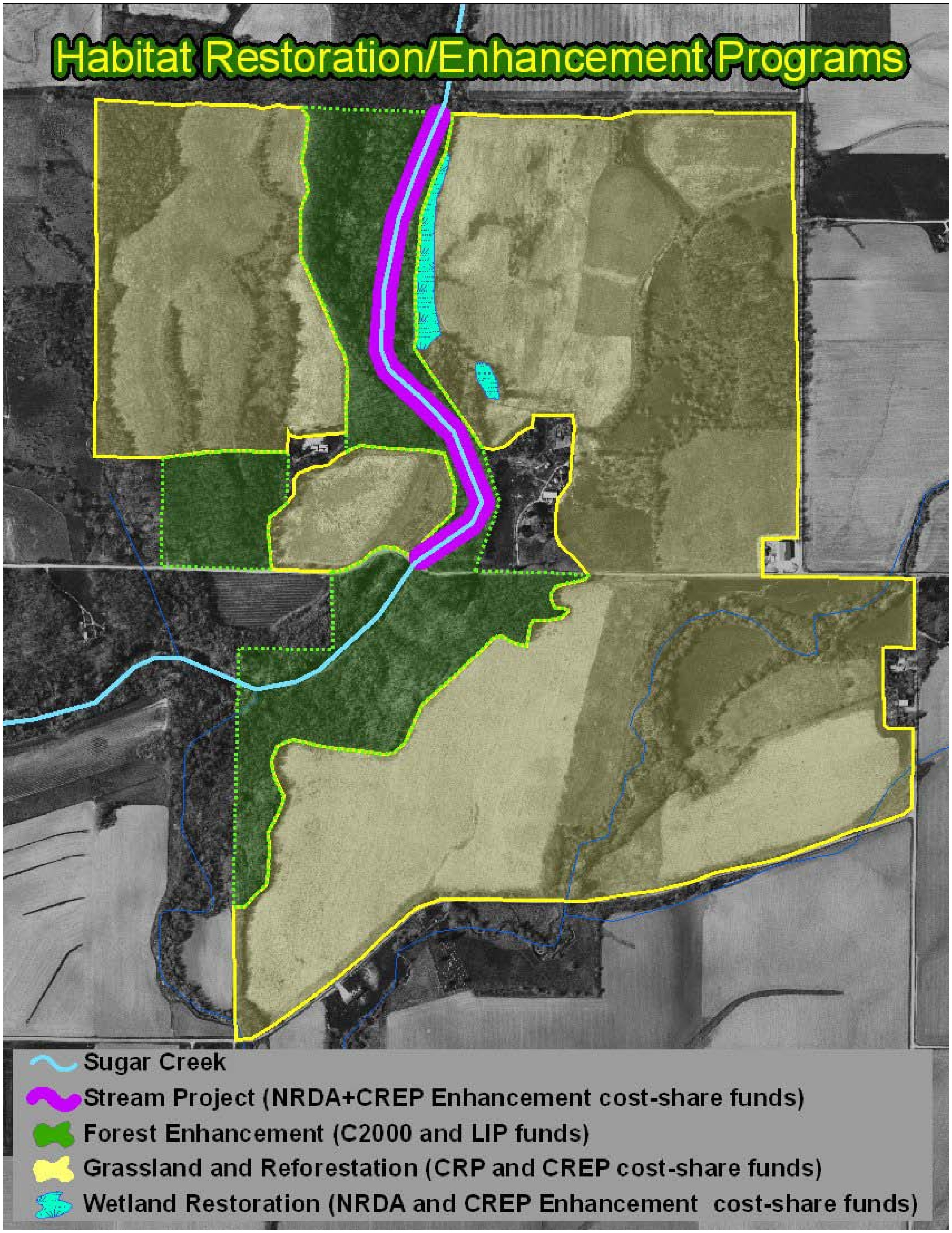


Figure 2. Digital Ortho map of the Sandra Miller Bellrose Nature Preserve (area in green) and implemented restoration projects. This map was obtained from IDNR Office Resource Conservation (ORC).

Figure 3. Instream Restoration Longitudinal Stone Habitat Structure

Figure 4. Wetland Restoration Project

Figure 5. Forest Enhancement Project

Figure 6. Grassland Enhancement Project

Monitoring Plans

For the Bellrose instream project, the objective was to increase the habitat for aquatic wildlife such as smallmouth bass, mussels, and aquatic insect species such as pollution intolerant and high quality indicator species. For the Bellrose wetland project, the objective was to increase wetland habitat for wetland birds, aquatic and terrestrial insects, and amphibians and reptiles. For the grassland and forest projects the objective was to improve the habitat's natural quality. To assess whether or not these projects are achieving their desired goals, monitoring has been conducted pre and post restoration implementation. Table 1 illustrates the different types of surveys conducted, by whom, year, and cost. The table also indicates the projected plans for monitoring the projects for a 10 year time period.

Table 1. Monitoring funds spent, allocated, and planned for the restoration projects taking place at the Bellrose Nature Preserve.

Bellrose Monitoring Funds	Calendar Years:	2006	2007 (FY 08)**	2008 (FY 09)	2009 (FY 10)	2010 (FY 11)*	2012 (FY 13)	2017 (FY 18)
Instream:	**Conducted By**	**Pre Rest**	**Pre Rest**	**1st year**	**2nd year**	**3rd year**	**5th year**	**10th year**
Bat Survey	IDNR	n/a	$0.00	n/a	n/a	n/a	n/a	n/a
Macroinvertebrate Survey/Identification	IDNR/INHS	n/a	$400 (FY 08)	n/a	$200.00 (FY 10)	n/a	approx $200.00 (FY13)	approx $200.00 (FY18)
Mussel Survey	IDNR	n/a	$0.00	n/a	n/a	$0.00	$0.00	$0.00
Habitat Survey	IDNR	n/a	$0.00	n/a	$0.00	$0.00	$0.00	$0.00
Small Mouth Bass Survey	IDNR	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Wetlands:								
Wetland Bird Survey	Bellroses	n/a	n/a	$0.00	$0.00	$0.00	$0.00	$0.00
Water Depth	Bellroses	n/a	n/a	$0.00	$0.00	$0.00	$0.00	$0.00
Vegetation and Hydrological Monitoring	LaGesse & Associates	n/a	n/a	Hydrological actual = $1,640; Vegetation actual: $2,340.00 (FY 09)	revised Hydrological only = $1,160 (FY10)	Veg = approx $1,735; Hydro = approx $947.50; Total = approx $2,682.50 (FY11)	approx $2,682.50 (FY13)	approx $2,682.50 (FY18)
Insect/Macroinvertebrate Survey	LaGesse & Associates	n/a	n/a	$3,322.50 (Sampling: Fall 08, Spring & Summer 09) (FY 10)		$2,842.50 (Sampling: Spring, Summer & Fall 2010) (FY 11)	approx $2,842.50 (Sampling: Spring, Summer, & Fall 2012) (FY 13)	approx $2,842.50 (Sampling: Spring, Summer, & Fall 2017) (FY18)
Wetlands, Grassland, and Forest:								
Bird Survey***	IDNR/Bellroses	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Herp Survey	Bellroses	n/a	n/a	$0.00	$0.00	$0.00	$0.00	$0.00
Monitoring funds available:		$11,000.00	$11,000.00	$10,600.00	$6,620.00	$1,937.50	$0.00	$0.00
Monitoring funds implemented:		$0.00	$400.00	($1,640 + $2,340) $3,980	($200 + $1,160 + $3,322.50) = 4,682.5	(~$2682.50 + ~$2,8420.50) = $5,525.00	n/a	n/a
Monitoring funds allocated:		n/a	n/a	n/a	n/a	n/a	n/a	n/a
Monitoring funds planned:		n/a	n/a	n/a	n/a	n/a	(~$200 + ~$2682.50 + ~$2,8420.50) = $5,725.00	(~$200 + ~$2682.50 + ~$2,842.50) = $5,725.50
Monitoring funds left over:		$11,000.00	$10,600.00	$6,620.00	$1,937.50	$0.00	~-$5,725.00	~-$5,725.00
Additional Funds required:		$0.00	$0.00	$0.00	$0.00	$3,587.50	~$5,725.00	~$5,725.00
						Total additional funds required (if all the surveys completed as outlined): $15,037.50 (remaining: 2012 - 2017 = $11,450.00)		
Notes:	* Beginning calendar year 2010/FY11 we will need to acquire funds from other sources (such as: Fish and Wildlife Fund) to cover the sampling costs. ** FY = State of Illinois Fiscal Year. *** Bird Survey: The bird counts for the Bellrose NP goes back to 2003.							

Disclaimer: This table does not contain the funds required for the LIP Vegetative Baseline Survey of the woodland enhancement project. The survey was conducted by LaGesse & Associates in the summer of 2007.

Monitoring Summary

Instream Restoration:

A.) Smallmouth Bass Fish Survey:

To date, IDNR staff have been conducting surveys and collecting the data. For the smallmouth bass fish survey an anticipated increase in larger fish with addition of habitat structures has not been evidenced thus far (Carney 2009). Samples show a declining overall catch rate that went from 22.2 fish per hour in 2006 and 53 fish per hour in 2007 (pre restoration) to 18.8 fish per hour in 2008, 5.7 fish per hour in 2009, and very similar results in 2010 (post restoration) (Carney 2009). The most plausible explanations for the decline in smallmouth bass numbers are unusually high rainfall amounts during the past four reproductive seasons (Figs 7 - 10). IDNR staff will continue to monitor this project annually and we anticipate better results in future years. Similarly, the other instream restoration surveys have been affected by high rainfalls in 2008 and 2009 and almost again in 2010.

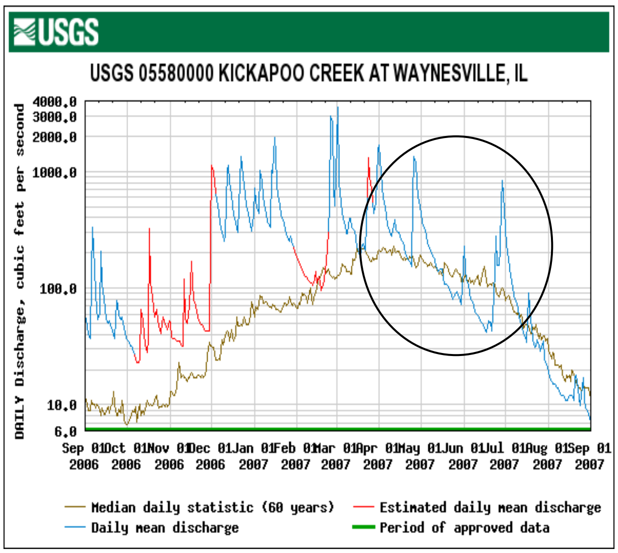


Figure 7. Daily mean discharge (cubic feet per second) in Kickapoo Creek, Waynesville, IL. September 1, 2006 to August 31, 2007.

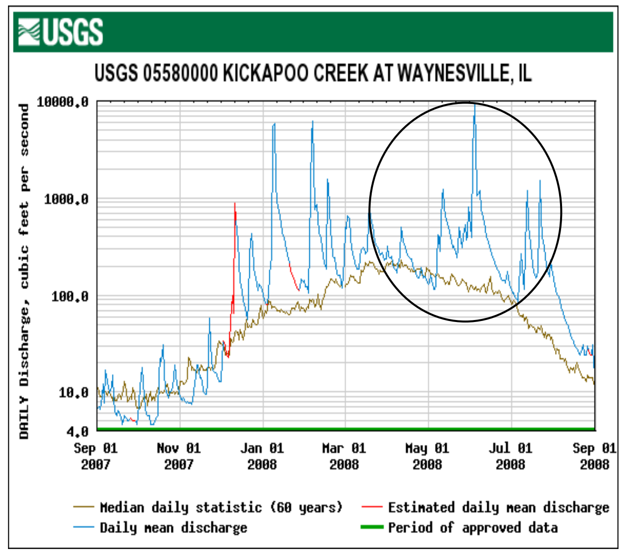


Figure 8. Daily mean discharge (cubic feet per second) in Kickapoo Creek, Waynesville, IL. September 1, 2007 to August 31, 2008.

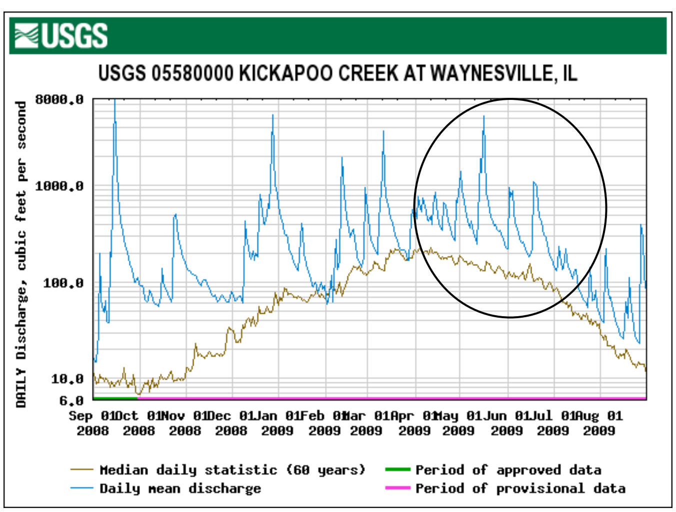


Figure 9. Daily mean discharge (cubic feet per second) in Kickapoo Creek, Waynesville, IL. September 1, 2008 to August 31, 2009.

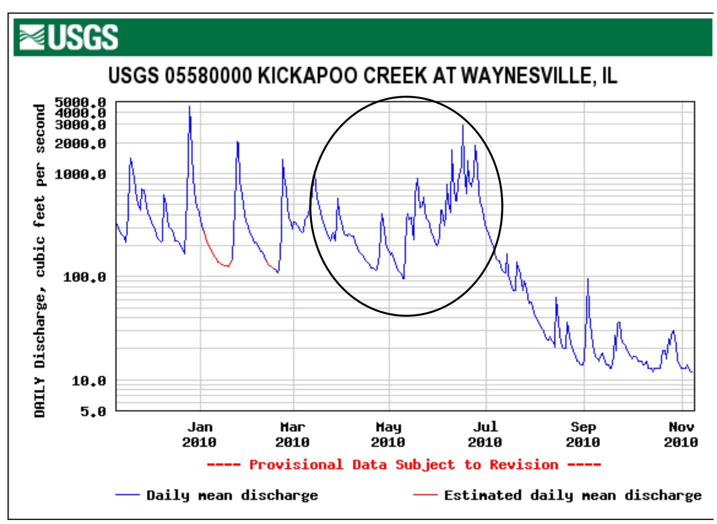


Figure 10. Daily mean discharge (cubic feet per second) in Kickapoo Creek, Waynesville, IL. January 2010 to November 2010.

B.) Aquatic Insect and Habitat Surveys:

Due to high instream water levels in 2009 we collected a lower quality of aquatic insect as compared to the 2007 pre restoration sample. The 2009 habitat survey (analysis of stream substrate, cover, floodplain quality, pool/glide/riffle/run quality etc) was very similar to the 2007 pre restoration survey, which indicates a good quality stream. Additional aquatic insect and habitat surveys will be conducted in future years.

Mussel Survey:

High water levels denied a mussel survey from being completed in 2008 and 2009. In 2010 we were able to conduct the first post restoration survey and it yielded some positive results. Basically we found very comparative results to our 2007 pre restoration survey: throughout both methods (transect/quadrat and 4 person hr surveys) we found about 136 individuals of 11 species in 2007 and this year we found 140 individuals of 11 species (Fig 10). There were only two species differing from 2007 to this year: in 2007 we found Fawnsfoot and Fatmucket mussels, which we did not find in the 2010 sample, but we did find Squawfoot and a Yellow Sandshell in the 2010 sample which we did not find in 2007. We also found a juvenile Pistrolgrip in the 2010 sample (Fig 11). We did not find any juveniles in the 2007 sample. We only had time to do 3 transects in the 2010 sample (as compared to 4 transects conducted in 2007) so there is a good chance our overall results would have showed a positive improvement from 2007 to 2010. This is quite surprising considering the amount of water that's traveled through the area the last few years and even the difference in water depth during our 2007 and our 2010 surveys. In 2007 the average depth was 1.30 feet and this year it was 1.55 feet.

Figure 10. A group of Mussels collected at one of the three transects during the August 2010 Bellrose mussel survey.

Figure 11. Juvenile (top of picture) and adult (bottom of picture) Pistolgrip mussels. Collected during the August 2010 Bellrose mussel survey.

Wetland Restoration:

A.) Vegetation/Hydrological Survey:

For the wetland restoration project we did not conduct pre restoration surveys so we are conducting post restoration surveys only and hoping to see an increase in native plant diversity over time as well as an increase in the abundance/diversity of wildlife utilizing the wetland habitat over time. For the vegetation/hydrological monitoring component a 2008 vegetation baseline assessment will be compared to a recent 2010 follow up assessment. We are waiting for the 2010 survey results. The information gained from these surveys will help in proper management of the wetland. For example, an initial observation of the wetland vegetation has led to the control of invasive species such as reed canary grass. Overall, the vegetation at the wetlands are still developing and we are trying to manage them for higher quality species, once we get better vegetation established more insects will be in the area which will also attract more wetland wildlife such as birds and herps. Therefore, more results will be realized with future monitoring efforts.

B.) Insect Survey:

Overall there was an increase in the diversity of insects found within and around both the large and small wetlands from the fall 2008 to spring 2009. However, filamentous green algae were found in the 2009 small wetland sample. Green Sunfish were also present and if they remain in the wetland they will reduce the overall abundance of invertebrates. Furthermore, snails and midges were abundant, which indicates poor water quality. In the large wetland however, there is evidence of Caddis Fly larvae, which is an indication of good water quality. The large wetland also contained detritus, sand, and mud which were attached to leaf materials in the sample. Additional insect sampling has been conducted in the summer of 2009, spring 2010, and summer 2010. We are awaiting these sampling results which will help us better analyze the temporal changes in aquatic insect abundance/diversity at the wetland restoration sites.

C.) Bird, Herp, and Other Observations:

The landowners participate in the annual Audubon Society bird count. The entire 400 acres of the preserve, which includes all 4 restoration/enhancement projects, is included in the area they walk and record their bird observations. The landowners have been actively participating in these surveys since 2003. Therefore we have a pretty good historical background of what birds have been seen on site, which we can compare to the surveys being conducted post restoration. There have been some notable increases in certain species abundance as well as some new species observed on site (Table 1). For example, there has been an increase in the number of Kingbirds and Bank Swallows on site post restoration (Table 1). Also, the following species have been seen on the site for the first time since the projects have been implemented: Common Nighthawk, Carolina and Sedge Wrens, and Tree Sparrow (Table 1). Overall the abundance of birds observed on site increased post wetland restoration however the diversity has remained the same with approximately 54 different species observed per year. Hopefully over time we will see an increase in both diversity and abundance of birds visiting the site as well as an increase in wetland specific birds utilizing the wetland habitat.

The landowners are also noting their observations of herps and other wildlife utilizing the site. For example, they have witnessed a grey fox, raccoon, and coyote. For herps they have seen a tree frog, leopard and bull frogs, brown snakes, one orange and blue ribbon snake, and possibly an Eastern Massasauga (Swamp Rattlesnake) which is an endangered species in Illinois. The landowners will continue to record the wildlife they observe on site and hopefully over time we will see an increase in the different types of wildlife utilizing the various restored/enhanced habitat types.

Table 1. Notable bird activity increases at the Bellrose Nature preserve as observed by the landowners from 2003 – 2007 (pre restoration) to 2008 – 2010 (post restoration) during the annual Audubon Society bird count.

Bellrose Bird List								
	2003	2004	2005	2006	2007	2008	2009	2010
Time Survey Conducted:	**N/A**	**N/A**	**May 7th 6:45 - 11:30a.m./4:00p.m.**	**6:00 a.m - 12:00 p.m.**	**N/A**	**7:30 AM**	**6:00 AM**	**6:15 AM**
Bank Swallow					1		11	
Blackburnian Warbler							1	
Common Nighthawk								2
Cow Bird	20	20	5	9		13	1	44
Gold Finch	20	24	12	27	8	21	15	70
Grosbeak			9	9	9	24	15	
Indigo Bunting	7	6	4	5	15	17	9	29
Kingbird	7	9				6	1	20
Rose-brested Grosbeak	3	3						11
Tanager						1		
Tree Sparrow						1		
Tree Swallow	2			2		2	12	
Worm-eating Warbler								4
Wren (Carolina)								2
Wren (Sedge)						2		

<u>Forest and Grassland Enhancement Projects</u>:

To date the only monitoring being done to assist in the assessment of the forest and grassland enhancement projects is the bird and herp activity observations being recorded by the Bellroses. The bird and herp observations span over all four habitat types. A vegetation baseline assessment was conducted by Vern LaGesse in 2007 per the LIP forest enhancement project. A post restoration vegetation survey of the forest enhancement project to compare to the baseline assessment is an interest but will be dependent on funds and resources. Similarly, for the grassland enhancement project a post restoration vegetation habitat assessment is of interest but also contingent upon future funding and available resources. Overall, it is anticipated that the vegetation quality of both communities will increase over time which will provide better habitat for terrestrial organisms.

Conclusions

This more intensive monitoring approach illustrates the type of information that can be collected when adequate funds and resources are available. The monitoring data generated for the Bellrose restoration projects are preliminary in the scope of the monitoring plan. The plan involves the continuation of monitoring these projects for 10 years post restoration (Table 1). So far the results have not indicated an increase in the habitat and wildlife quality, which is primarily a result of significant rainfall amounts impacting the instream parameters and a lack of high quality vegetation impacting the wetland parameters. However, the 2010 mussel survey did provide evidence that the mussel community has not been negatively impacted by the project's implementation and hopefully overtime the mussel diversity/abundance will go up. In order to assess the trend of the ecological parameters over time we will continue to monitor the projects.

Long-term monitoring data are required in order to properly assess and evaluate changes in watersheds. The monitoring protocol is intended to generate practical information for evaluating project development and implement mid-course corrections when necessary. Ultimately however, the results can be defended in a number of ways, and therefore, in order to be truly accountable, the CREP program will need to learn from the results and make their best efforts to improve the system they are trying to restore.

Overall, this is a great project in the respect of the partnerships formed to conserve and monitor critical habitat. However, the project could not have happened without the dedication and participation of the landowners. In order for the CREP program to be effective we need landowners like Ron and Sandra Bellrose to enroll their property into the program and invest in long term conservation practices. For Ron and Sandra however, the ownership of the projects does not stop there. They have an integral part in the monitoring taking place at their site including bird, herp, and wetland water depth monitoring. This illustrated commitment of the landowners to conservation and monitoring is a driving force behind the success of the Illinois Conservation Reserve Enhancement Program.

References

Carney, Doug. 2009. 2009 Smallmouth Bass Assessment in Sugar Creek, Bellrose Nature Preserve, Logan County, IL. Illinois Department of Natural Resources Memorandum. p. 1-5.

Lerczak, Tom. 2000. Proposal for Dedication of Sandra Miller Bellrose Nature Preserve as an Illinois Nature Preserve. Illinois Nature Preserves Commission. INPC 169 Item 15. p. 1.

University of Illinois
Institute of Natural Resource Sustainability
William Shilts, Executive Director

ILLINOIS NATURAL HISTORY SURVEY
Brian D. Anderson, Director
1816 South Oak Street
Champaign, IL 61820
217-333-6830

A Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois

James Ellis, Timothy Rye, and Jessica Forrest

Critical Trends Assessment Program

Prepared for:
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

INHS Technical Report 2010 (09)
Date of issue: 05 February 2010

ILLINOIS
NATURAL
HISTORY
SURVEY

Acknowledgements

The authors would like to acknowledge guidance for this project from Illinois Department of Natural Resources Conservation Reserve Enhancement Program coordinators Debbie Bruce and Valerie Njapa. Additional assistance for site access and site histories came from Terre Zeigler (Piatt County CREP Assistant), Wade Louis (IDNR Wildlife Biologist), Thad Eshleman (Iroquois County District Conservationist), and Terry Nichols (Sangamon County Resource Conservationist). Field assistance was provided by Valerie Njapa, Debbie Bruce, Justin Ramey (IDNR Intern), Martin St Aubin (IDNR Intern), Lisa Pickert (IDNR Intern), Christina Pierce (IDNR Intern), and Bridgette Moen (INHS/CTAP botanical assistant). Michael P. Ward coordinates the Critical Trends Assessment Program at the Illinois Natural History Survey.

Summary

Biological assessment and monitoring of properties enrolled in the Conservation Reserve Enhancement Program (CREP) in Illinois has been lacking. To remedy this situation, scientists from the Illinois Department of Natural Resources and the Illinois Natural History Survey teamed up in 2009 to conduct a pilot study to make general botanical assessments of 11 sites comprising 17 private properties in central Illinois enrolled in CREP. Each site was visited once, and a list of plant species and general vegetation structure were noted. Sites ranged from being dominated by native herbaceous species like common goldenrod to being dominated by tree species like silver maple and eastern cottonwood. Native plant species were generally more abundant than non-native species, but invasive species like reed canary grass, field thistle, and amur honeysuckle were present on some sites and could pose future management concerns. Compared to randomly selected wetland and grassland sites sampled as part of the Critical Trends Assessment Program (CTAP), the CREP sites were more botanically rich and diverse, but as sites mature without management or disturbance, plant diversity is expected to decline.

Introduction

The Conservation Reserve Enhancement Program (CREP) is a federal conservation incentive program administered through the US Department of Agriculture's Farm Service Agency, Natural Resources Conservation Service, local Soil and Water Conservation Districts, and the Illinois Department of Natural Resources. Landowners can voluntarily enroll parcels of land and receive incentive payments for installing specific conservation practices that help protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. Typically lands that are eligible are those with a cropping history. Once a parcel is enrolled, the land use changes, and conservation practices include planting the site with a permanent vegetative cover such as grass or trees.

The goal of CREP is to establish conservation practices to reduce sedimentation and nutrient input while enhancing habitat to increase fish and wildlife populations. The entire Illinois River Basin is targeted with an emphasis on the 100-year floodplain (Figure 1). Parcels of land managed for conservation rather than agriculture along the main stem of the Illinois River and its tributaries are expected to help protect water quality in the river. Landowners enroll eligible agricultural land in a Federal 15-year Conservation Reserve Program (CRP) contract and receive annual rental payments and cost-share incentives. For example, planting trees is eligible for cos-share. Once enrolled in the Federal side, landowners have the option to extend their contract by entering into a State conservation easement for an additional 15 years, 35 years, or permanently, and the State of Illinois provides incentives for the different options. Participants retain ownership of their land, and CREP does not place restrictions on recreational activities, including hunting and fishing.

The Illinois CREP program is one of the most successful in the nation. Remarkably, since the start of the program in 1998, Illinois has enrolled more than 126,000 acres. Implementation and holding of Federal and State contracts at the local level has been a key to CREP's success in Illinois. Over 90% of State CREP acres are in permanent easements, ensuring long-term protection of floodplains and other environmentally sensitive land.

Botanical Assessment of CREP Sites

Since the creation and implementation of CREP in Illinois, very little biological assessment or monitoring has been conducted to evaluate if the program is achieving what it set out to accomplish. Local Soil and Water Conservation Districts (SWCD) conduct easement compliance monitoring, but they might lack the skill or resources to conduct biological assessment or monitoring. Researchers from the Illinois State Water Survey have conducted research to monitor sediments and nutrients in select watersheds to evaluate this aspect of the program (Demissie et. al 2001). Other researchers have examined the impact of CRP on bird populations (e.g. Herkert 2007, 2009). CRP was first implemented in the early 1980s, and most of the conservation practices involved planting perennial vegetation such as grass. Systematic assessment of CREP practices and its impacts on plants or wildlife has generally been lacking.

To remedy the lack of biological assessment information, CREP management personnel from the

Illinois Department of Natural Resources (IDNR) approached biologists working for the Critical Trends Assessment Program (CTAP) at the Illinois Natural History Survey in early 2009 to initiate a pilot study. CTAP biologists have been collecting bird, plant, and insect data from randomly selected forest, wetland, and grassland habitats across the state of Illinois since 1997 (IDNR 2001). Invertebrate data from randomly selected stream segments were also collected from 1997 to 2007. CTAP botanists were able to provide a basic knowledge of Illinois flora and brought extensive field experience to the pilot study. CTAP also provides a large data set with which to make some generalized comparisons of CREP sites assessed. Specifically, CTAP botanists were asked to work with IDNR staff to provide on-the-ground botanical assessments of a subset of CREP sites during the 2009 field season.

Methods

To expedite fieldwork, CREP sites for this study were selected based on proximity to CTAP 2009 sites. GPS coordinates for the CTAP 2009 sites and shapefiles (.shp) for all Illinois CREP easements were obtained. ArcGIS software was used to query all CREP easements within a 1 km radius of CTAP 2009 sites. This query provided a random number of CREP sites to assess, but did not fulfill a desire to assess sites from across the geographical range of the CREP project area. Sampling gaps (areas with no CTAP sites) existed in the North Eastern (Iroquois County), South Central (Cass County), and North Western (Knox County) range of the Illinois CREP watershed. Additional CREP sites were then randomly selected in these areas. All of the CREP sites were on private property, so IDNR staff worked with local SWCD staff to contact prospective landowners and gain permission to access their property.

Each site was visited once during June, July, or September 2009. Visual assessments were made by walking through or around each site and each practice where feasible (Figures 2 and 4). Thick vegetation or high water levels made some sites or parts of sites inaccessible. Length of visit depended on size of site (acreage), accessibility, and general diversity of vegetation present. Larger and more botanically diverse sites typically took longer to assess. A plant species list was made of all vegetation encountered during the visit, and notable features such as dominant plant species, general height of vegetation, woody trees or shrubs, and height of woody vegetation were recorded as well. Vegetation height was estimated on-site. No attempt was made to catalog every species that might have occurred on a site. Other notes might include water level or conditions, evidence of past disturbance such as flooding or mowing, or evidence of current management practices such as herbicide application or mowing. These notes were compiled to create basic plant species lists for each site as a whole as well as distinct fields or conservation practices within a site. Other notes about wildlife observations, site conditions on the day of the visit, or about site access were also compiled (Figure 3). Photographs were also taken at most of the sites.

Results and Discussion

A total of 11 sites that encompassed 17 properties were selected and assessed (Figure 1, Table 1, Appendix 1). A total of 41 practices were assessed within the 11 sites. The number of practices on each property ranged from one to six with a median of one practice per property. Ten different conservation practices were observed with the most common being CP22 (Riparian

Forest Buffer). Eleven of the seventeen properties also had Additional Acres as part of the CREP easement. Most of the Additional Acres were forested areas eligible for easement payment because they were in a 100-year floodplain and because they were adjacent to a CREP practice on the property. Properties ranged in size from eleven to 361 acres with a median size of 63 acres. Combined, all 17 properties totaled 2,201.61 acres. Length of time spent at each site ranged from one to four hours. Representative photographs of each site are included in Appendix 2.

As expected for properties eligible for enrollment in CREP, most sites could be classified as floodplains or bottomlands that are seasonally wet through the late winter and spring. Most sites were dry or not inundated with water during visits, but above average rainfall made one site near the Illinois River inaccessible due to flooding conditions.

It's difficult to make precise evaluations of conservation success or habitat quality based on these brief site visits because of multiple factors: differences in time since practice implementation, differences in vegetation planted, differences in current management practices, differences in hydrology, and differences in adjacent land-use (i.e. vegetation cover). General estimates of plant richness and diversity can be gleaned from the species lists made during each site visit and should only be used to give a general impression of vegetative cover at this point in time. That being said, a basic evaluation of sites visited can be made

Plant Structure and Composition

We would generally characterize these CREP sites as early successional, fallow farm fields. General observations made at each site and plants species lists can be found in Appendix 3. All sites were well vegetated with no obvious patches of bare soil. Plant structure ranged from sites dominated by grasses and herbaceous species to sites dominated by trees. Herbaceous vegetation typically ranged from two to four feet tall depending on the dominant species present. Trees included species planted as part of a conservation practice (typically oaks) or adventive tree species naturally regenerating. Since all practices visited were less than ten years old, most trees were not very tall and ranged from some planted individuals that were two to three feet tall to fast growing adventive species that were fifteen to twenty feet tall. Sites with frequent flooding disturbance usually had the thickest stands of adventive trees like silver maple and cottonwood since seeds of these species are easily carried by floodwaters and readily colonize recently disturbed floodplains (i.e. sites with a history of agriculture). Tree densities were estimated from thick, to scattered, to patchy depending on site conditions. Observed success of planted trees was variable—on a few sites hardwood tree species were obvious and at other sites planted trees were scattered and difficult to detect. This between site variability probably depended on the size of trees planted (small bare root seedlings versus larger RPM grown trees) as well as local site conditions. Planted trees did poorly on sites with frequent flooding as well as on sites where herbaceous vegetation or adventive trees over-topped planted trees. Oak species need plenty of sunlight to thrive and do poorly in shaded conditions.

The most common grass species were tall fescue, Hungarian brome, Kentucky bluegrass, and Virginia wild rye. Yellow fox sedge and green bulrush were sedges commonly encountered in wet areas. Big bluestem and eastern gama grass was prominent at sites where it was planted (e.g.

Site 2a). Common herbs included common goldenrod, dogbane, common milkweed, annual fleabane, ditch stonecrop, common ragweed, and giant ragweed. Two adventive tree species—silver maple and eastern cottonwood—were encountered at almost every site. These species are readily found in floodplains across central Illinois. Other adventive tree species included black cherry, black willow, and green ash. Planted tree species included sycamore, green ash, persimmon, butternut, burr oak, swamp white oak, pin oak, and other oak species.

Non-native plant species were present on every site, but generally, native plant species represented most of the plant richness observed. Only a few sites were dominated by non-native species (i.e. Hungarian brome at Site 2b and 8c, wild parsnip at Site 4, reed canary grass at Site 5, barnyard grass at Site 7, and tall fescue at Site 11). These species are widely planted for agricultural purposes, and they might have been planted at these sites or invaded from nearby fencerows or road ditches.

Invasive plant species were noted on many sites but were not necessarily ubiquitous across sites. Generally speaking an invasive species is a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health (see Colautti and MacIsaac 2004). Worrisome species that were observed at a few of these sites included musk thistle, poison hemlock, field thistle, white and yellow sweet clover, wild parsnip, and reed canary grass. Silky bush clover and common reed were observed at one site (Site 2a). Woody invasive species like autumn olive, amur honeysuckle, and white mulberry were generally few and scattered where observed. Reed canary grass is an especially worrisome species that has been widely planted (Galatowitsch et al. 1999) and readily invades disturbed, wet soil (Kercher and Zedler 2004). Monotypic stands of this species have been shown to greatly decrease local biodiversity (Spyreas et al. 2009).

Site Evaluation

A comparison and general evaluation of CREP sites assessed for this study can be made with wetland and grassland sites sampled as part of the Critical Trends Assessment Program. CTAP sites are randomly selected from across the state of Illinois and therefore are expected to yield a picture of average wetland and grassland habitat in Illinois. Vegetation data are collected using a quantitative, plot based system (Molano-Flores 2002).

CTAP has found that in general, native plant species richness and overall cover are greater than non-native plant species in average wetlands (Molano-Flores et al. 2007). Even with this general finding, CTAP has also observed that almost a third of all randomly selected wetlands are dominated by the invasive reed canary grass (Spyreas et al. 2004). As mentioned above, this pernicious weed colonizes wet soils and forms monotypic stands usually to the detriment of other species. On average about 12 native and two non-native plant species were encountered in CTAP wetlands.

Grasslands sampled by CTAP probably have more of an affinity to most CREP sites because of similar hydrologic conditions, past disturbance events (usually row-crop agriculture), and current vegetation patterns. With the almost complete destruction of the native grassland ecosystem (prairie) in Illinois, grassland habitat is now comprised of land in agricultural uses—pasture, hay, small grains, orchards, fallow fields, and now increasingly set aside land in programs like CRP and CREP. In general more native plant species are encountered than non-native species in average grassland sites, but non-native species are typically more dominant because they comprise a greater proportion of the vegetation cover. The overwhelming majority of grasslands sampled by CTAP can be characterized as being dominated by non-native, cool-season grasses like Hungarian brome, tall fescue, and Kentucky bluegrass. On average about 11 native and seven non-native plant species were encountered in CTAP grasslands.

We observed a greater richness of native plant species at CREP sites than at comparable CTAP sites, and consistent with CTAP findings, most of the species encountered at CREP sites were native to the Illinois flora. Even though quantitative measurements were not taken, the general sense is that native plant species were dominant at most sites except for a few (Site 2b Hungarian brome, Site 4 wild parsnip, Site 5 reed canary grass, Site 7 barnyard grass, Site 8c Hungarian brome, Site 11 Hungarian brome and tall fescue), and even at these sites, these species were usually co-dominant with native species. This is contrary to CTAP results for Illinois grasslands.

A closer look at the species encountered will also reveal that even though most of the plants are native, these species are ones that are disturbance tolerant and usually considered weedy. Native annual weeds like common and giant ragweed and annual fleabane were encountered at many sites. Common goldenrod is a quick growing, native perennial herb that readily colonizes disturbed sites, and it was detected at almost every CREP site. Other weedy native, perennials included panicled aster and hairy aster. Woody natives with a somewhat weedy habit included species mentioned earlier—silver maple, eastern cottonwood, and green ash. We assume that barring management or disturbances such as fire, flooding, mowing, or herbicide application, CREP sites will eventually become less botanically diverse as perennial herbaceous species or trees become more dominant and annual and biennial species fade away. There is also the possibility of invasive plant species becoming dominant and problematic. Without control or intervention, species like field thistle, amur honeysuckle, white mulberry, and reed canary grass might grow and spread to the detriment of other species thus diminishing the habitat quality of the CREP practice.

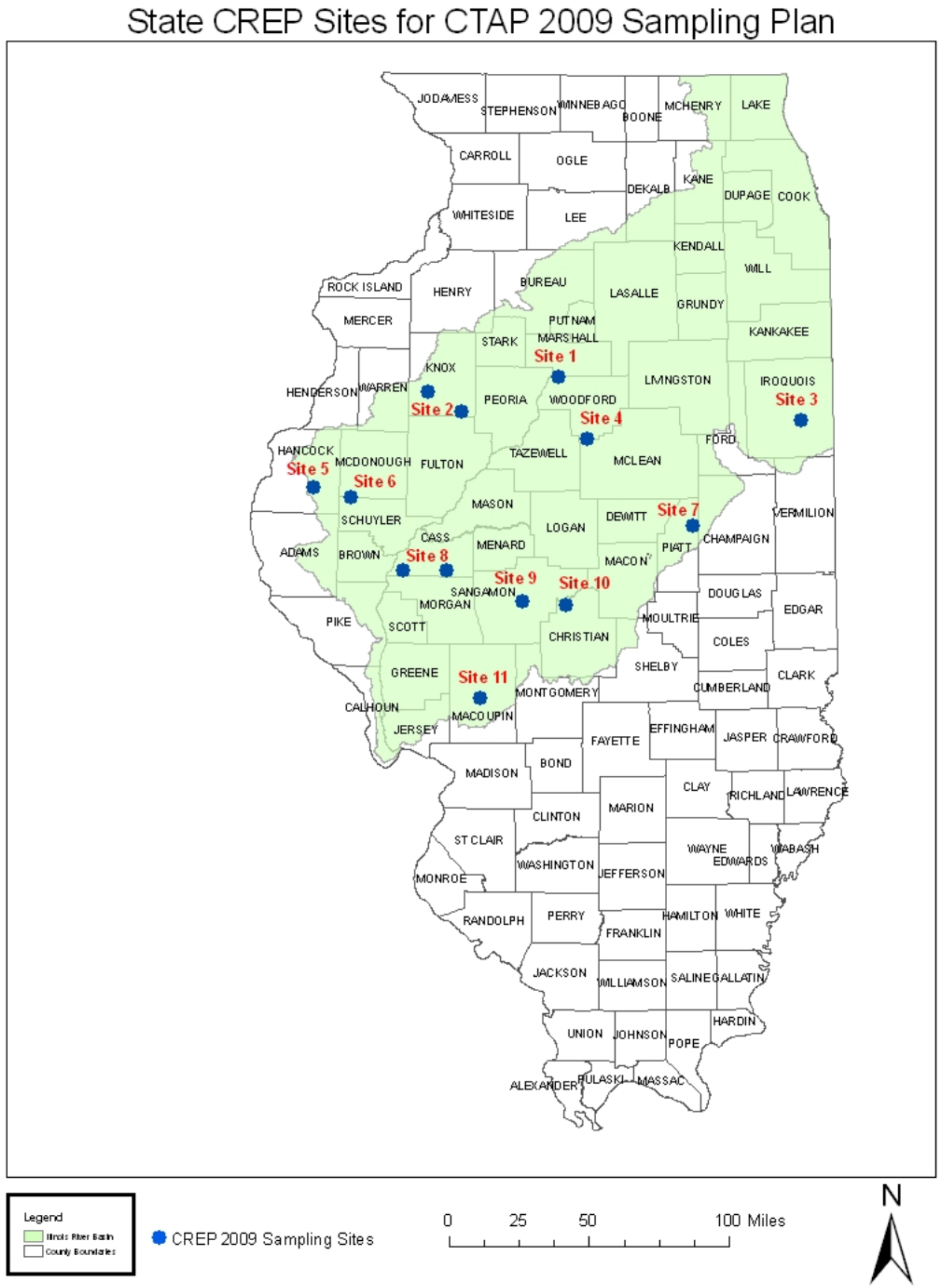


Figure 1. Conservation Reserve Enhancement Program (CREP) sites sampled during summer 2009 as part of the botanical assessment pilot study. The entire Illinois River Basin is currently the target region for Illinois CREP.

Table 1. A summary of the CREP properties sampled for the summer 2009 botanical assessment pilot study. Habitat type indicates the conservation practice, and expiration refers to the number of years easement lasts since enrollment. Listed area is in acres.

Site #	Habitat Type	Practice	County	Year Implemented or Enrolled	Expiration	Listed Area	Total Acres
1	Permanent Wildlife Habitat	CP4D	Marshall	2000	15	114.40	120.40
2a	Riparian Forest Buffer	CP22	Knox	1999	PERM	7.30	361.40
						53.20	
	Wetland Restoration	CP23				27.70	
						32.50	
						115.00	
	Additional Acres	ADD				125.70	
2b	Native Grass Planting	CP2		2001	35	2.50	14.30
	Hardwood Tree Planting	CP3A				10.00	
	Wildlife Food Plot	CP12				1.80	
	Wetland Restoration	CP23				72.10	116.90
	Riparian Forest Buffers	CP22				39.60	
	Filter Strips	CP21				2.00	
3	Riparian Forest Buffers	CP22	Iroquois	1999	PERM	43.80	43.80
4	Riparian Forest Buffers	CP22	McLean	2000	15	7.60	11.10
						3.50	
5	Riparian Forest Buffers	CP22	Hancock	2001	15	53.60	73.10
						19.5	
6b	Wetland Restoration	CP23	McDonough	2001	PERM	38.00	111.60
						22.00	
						2.10	
						14.40	
						6.00	
						5.30	
						16.20	
						7.6	
	Additional Acres	ADD				41.30	41.30
6a	Riparian Forest Buffer	CP22			PERM	248.50	253.50
	Shallow Water Areas for Wildlife	CP9				5.00	
	Additional Acres	ADD				63.60	63.60

Table 1. Continued.

Site #	Habitat Type	Practice	County	Year Implemented or Enrolled	Expiration	Listed Area	Total Acres
7	Shallow Water Areas for Wildlife	CP9	Piatt	2007	PERM	10.00	~ 59
	Riparian Forest Buffer	CP22				25.20	
	Habitat Buffers for Upland Birds	CP33				8.50	
	Additional Acres	ADD				14.09	
	Wildlife Food Plot	CP12				1.40	
8c	Permanent Wildlife Habitat	CP4D	Cass	2002	15	8.70	11.70
	Filter Strips	CP21		2002		3.00	
8a	Wetland Restoration	CP23	Cass	1998	PERM	18.8	170.26
						43.2	
	Additional Acres	ADD				108.26	
8b	Wetland Restoration	CP23		1998	PERM	237.8	450
	Additional Acres	ADD			PERM	212.2	
9a	Additional Acres	ADD	Sangamon	2001	PERM	20.70	43.30
	Riparian Forest Buffers	CP22				11.10	
						10.50	
						1.00	
9b	Hardwood Tree Planting	CP3A		2002		45.20	84.18
	Additional Acres	ADD				38.98	
10a	Hardwood Tree Planting	CP3A	Sangamon	2002	PERM	6.40	60.24
	Additional Acres	ADD				53.84	
10b	Hardwood Tree Planting	CP3A	Christian	2004	PERM	25.50	53.29 (This is the right total, GIS is missing 5 ADD acres)
	Additional Acres	ADD				9.50	
						13.20	
11	Filter Strips	CP21	Macoupin	2002	PERM	11.50	58.64
	Shallow Water Areas for Wildlife	CP9				8.4	
	Additional Acres	ADD				38.74	
Totals							**2201.61 acres**

Figure 2. CTAP biologists assessing vegetation and recording observations.

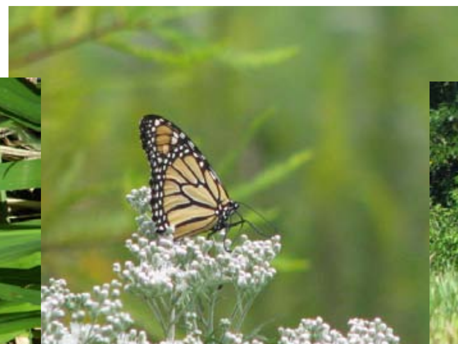


Figure 3. Examples of wildlife observed during site visits.

Figure 4. CTAP biologists and IDNR staff evaluating various CREP practices. For example: a tree planting on the left and a wetland on the right.

Literature Cited

Colautti, R. I. and H. J. MacIsaac. 2004. A neutral terminology to define ‘invasive’ species. Diversity and Distributions 10:135-414.

Demissie, M., L. Keefer, J. Slowikowski, A. Russell, T. Snider, and K. Stevenson. 2001. Sediment and Nutrient Monitoring at Selected Watersheds within the Illinois River Watershed for Evaluating the Effectiveness of the Illinois River Conservation Reserve Enhancement Program (CREP). Contract Report 2001-12.

Galatowitsch, S. M., N. O. Anderson, and P. D. Ascher. 1999. Invasiveness in wetland plants in temperate North America. Wetlands 19:733-755.

Herkert, J. R. 2007. Conservation Reserve Program benefits on Henslow’s Sparrows within the United States. Journal of Wildlife Management 78**:**2749–2751.

Herkert, J. R. 2009. Response of Bird Populations to Farmland Set-Aside Programs. Conservation Biology 23(4):1036-1040.

Illinois Department of Natural Resources. 2001. Critical trends in Illinois ecosystems. Illinois Department of Natural Resources, Office of Realty and Environmental Planning, Office of Scientific Research and Analysis, Springfield, Illinois, USA.

Kercher, S. M., and J. B. Zedler. 2004. Multiple disturbances accelerate invasion of reed canary grass (Phalaris arundinacea L.) in a mesocosm study. Oecologia 138:455-464.

Molano-Flores, B. 2002. Critical Trends Assessment Program Monitoring Protocols. Illinois Natural History Survey, Office of the Chief Technical Report 2002-2. 38 pp.

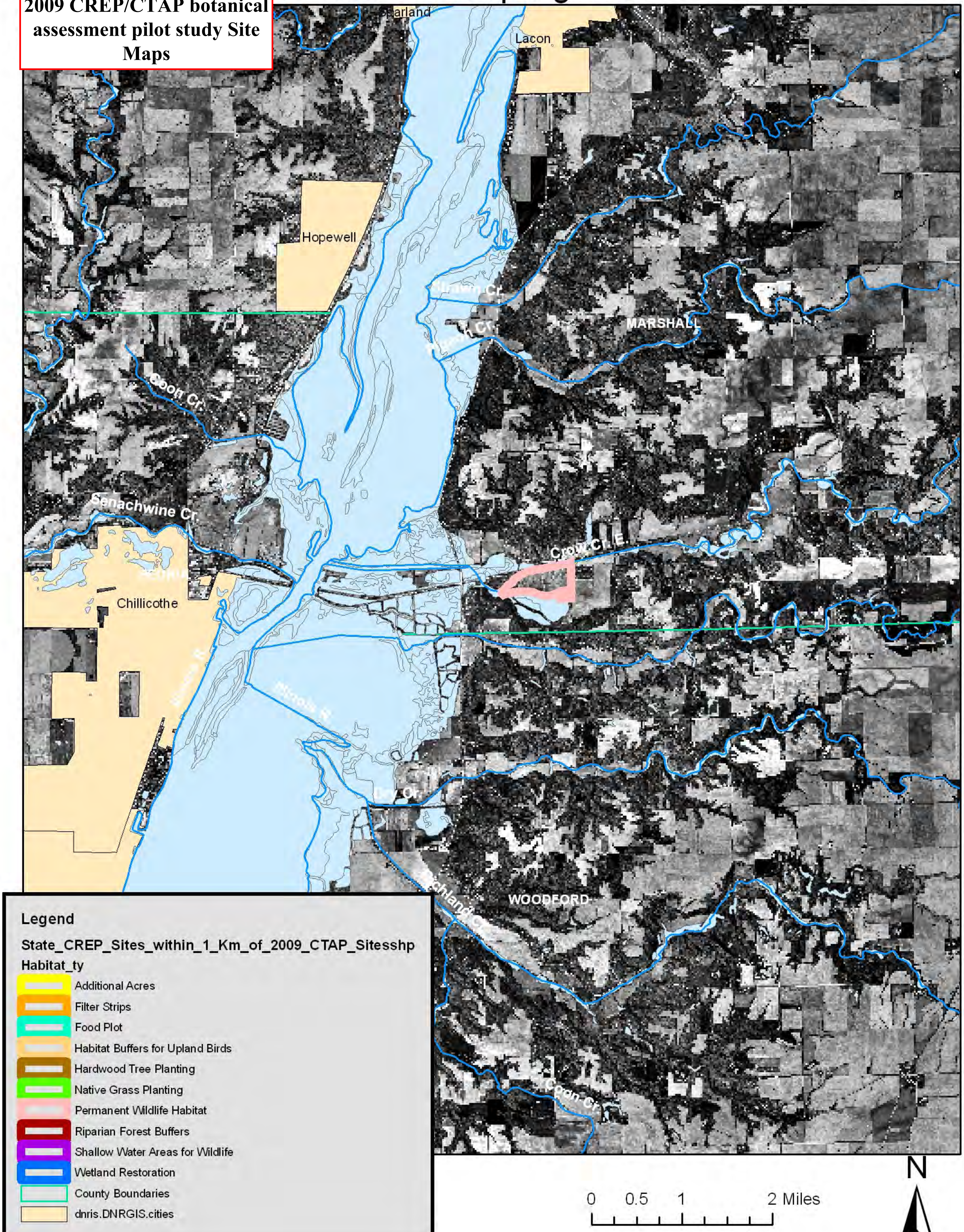
Molano-Flores, B., C. C. Carroll, J. L. Ellis, G. Spyreas, R. Edward DeWalt, S. Bailey, R. Jack, and M. Ward. 2007. Critical Trends Assessment Program: Keeping an Eye on Illinois Habitats. Illinois Department of Natural Resources, Office of Scientific Research and Analysis. 28 pp.

Spyreas, G., J. Ellis, C. Carroll, and B. Molano-Flores. 2004. Non-native plant commonness and dominance in the forests, wetlands, and grasslands of Illinois, USA. Natural Areas Journal 24:290-299.

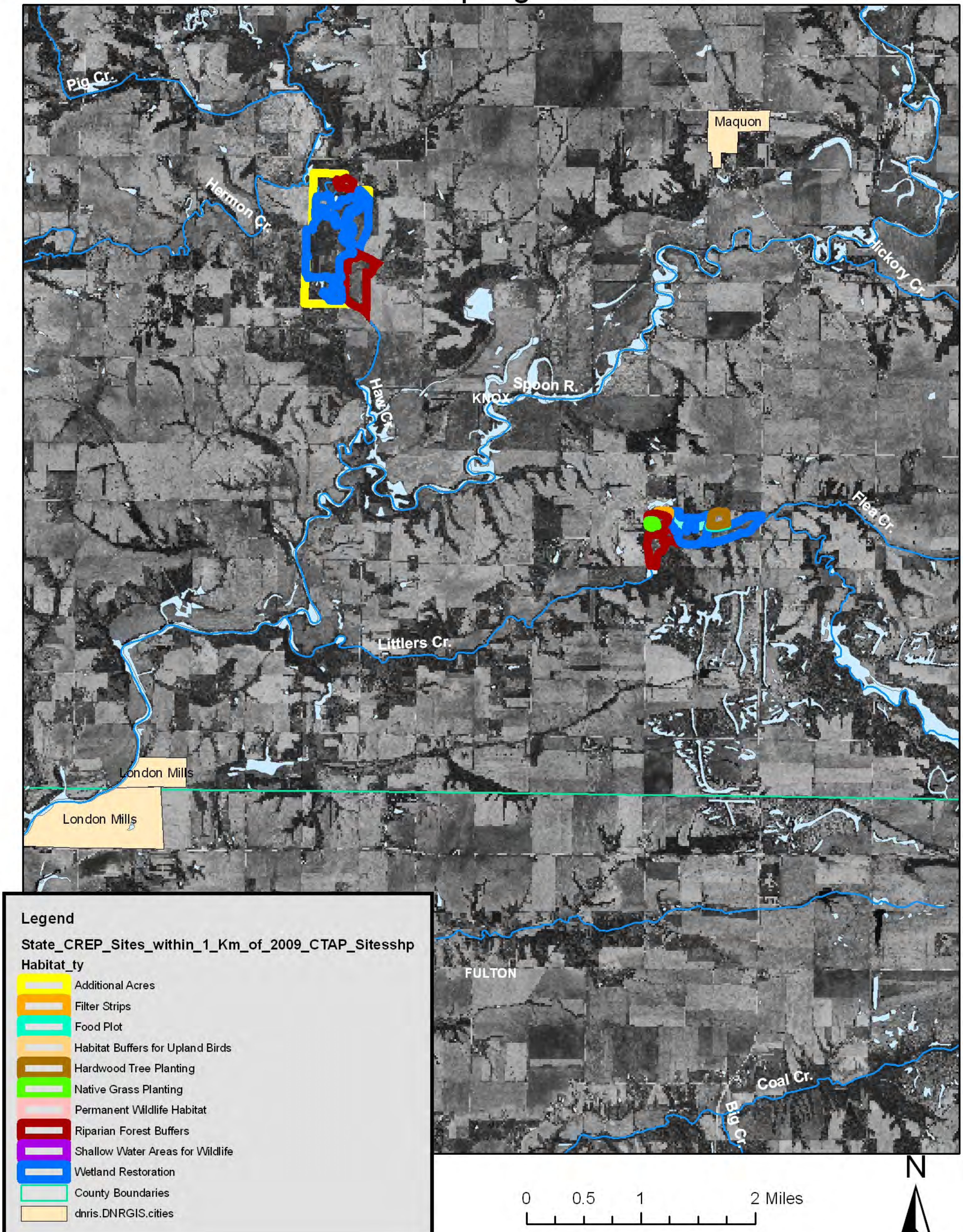
Spyreas, G., B. W. Wilm, A. E. Plocher, D. M. Ketzner, J. W. Matthews, J. L. Ellis, and E. J. Heske. 2009. Biological consequences of invasion by reed canary grass (*Phalaris arundinacea*). Biological Invasions.

APPENDIX 1
2009 CREP/CTAP botanical assessment pilot study Site Maps

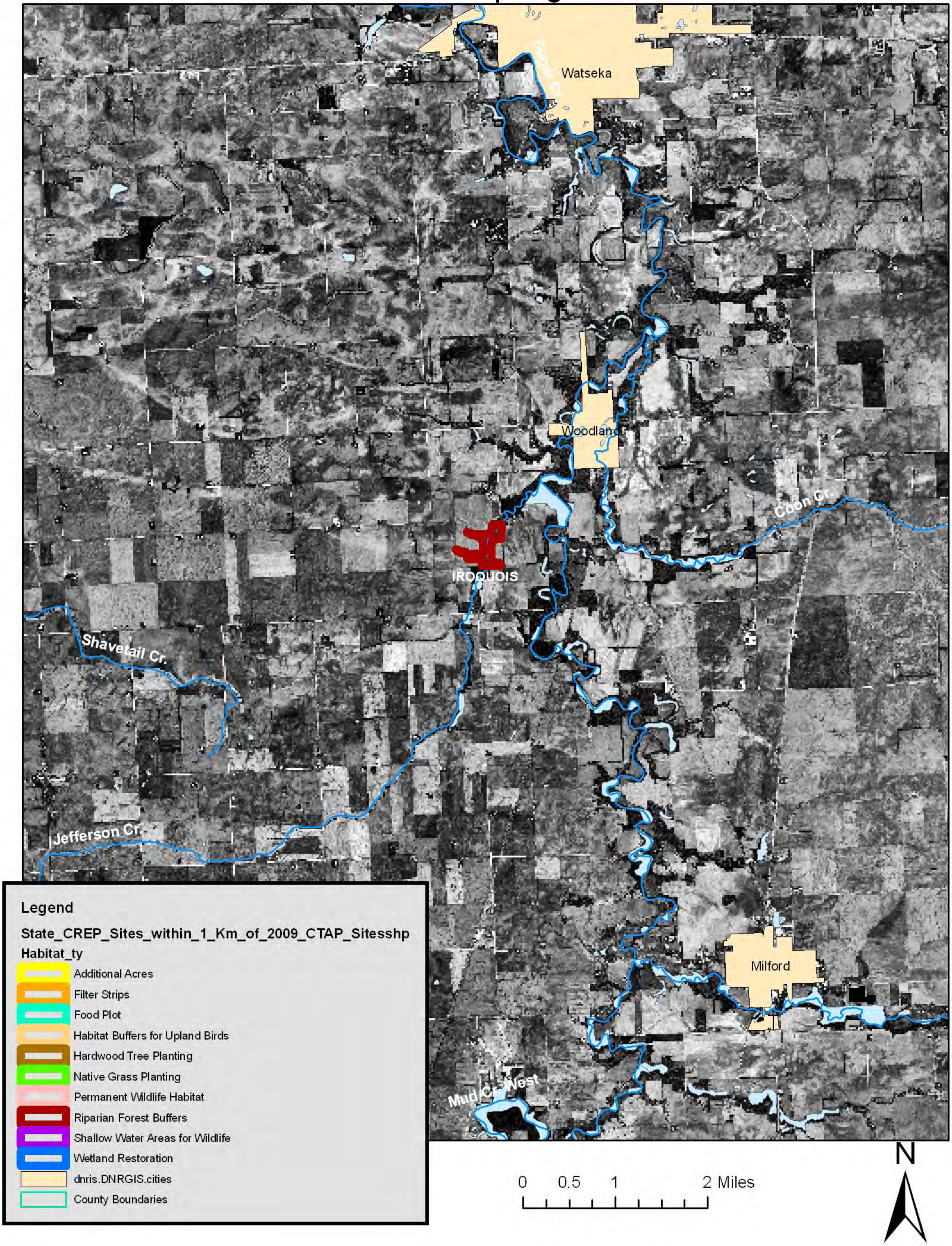
CREP Sampling Site #1



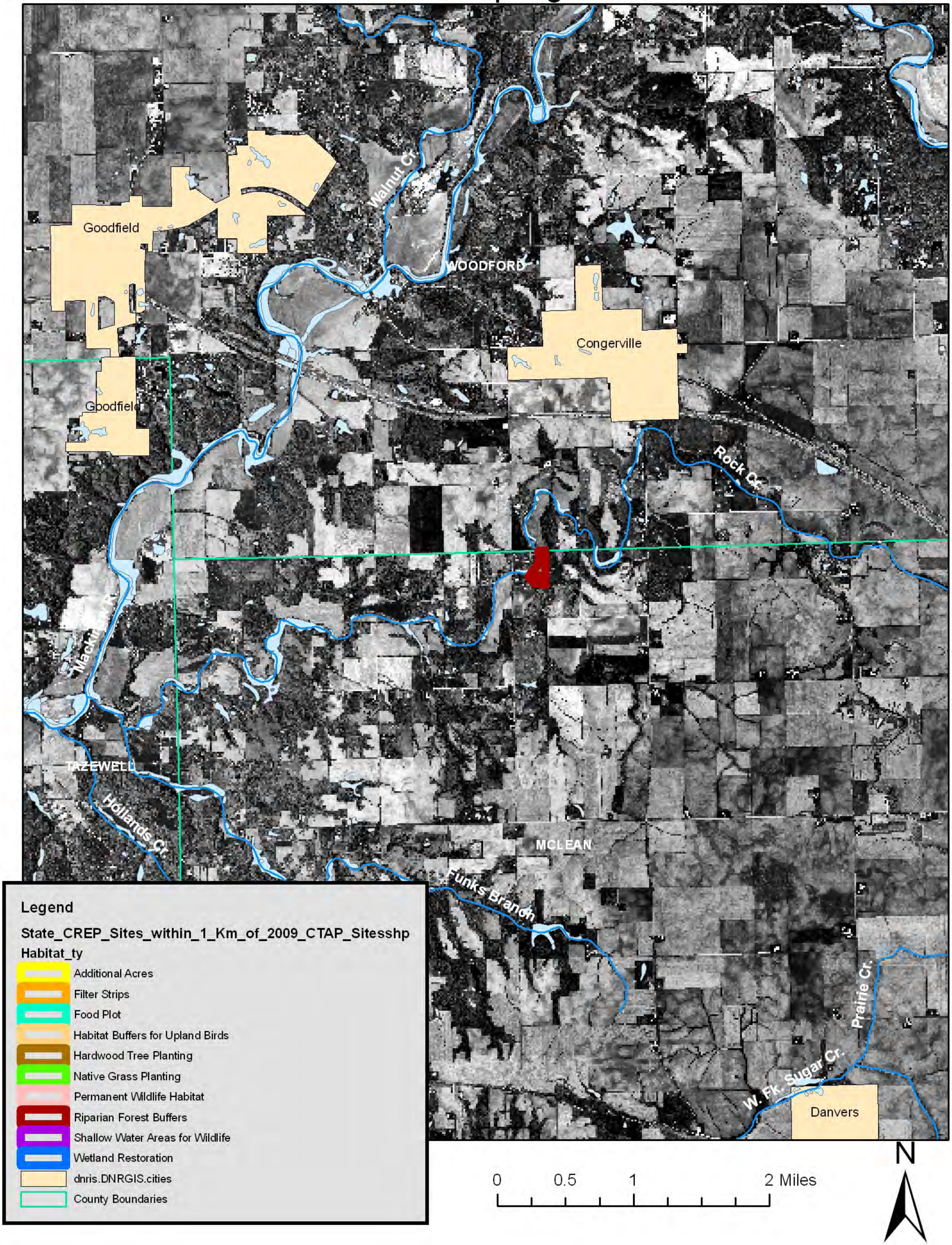
CREP Sampling Site #2a & b



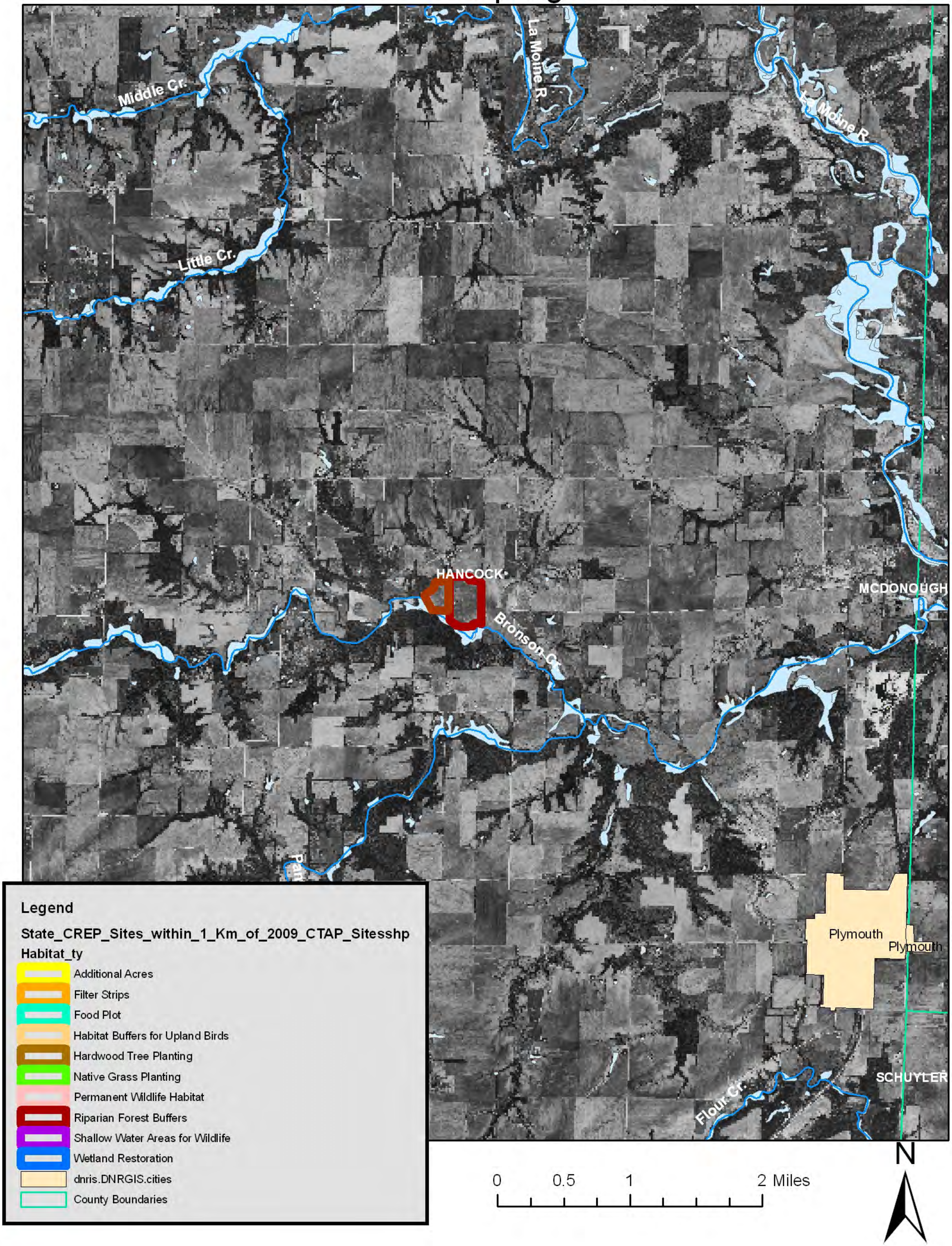
CREP Sampling Site #3



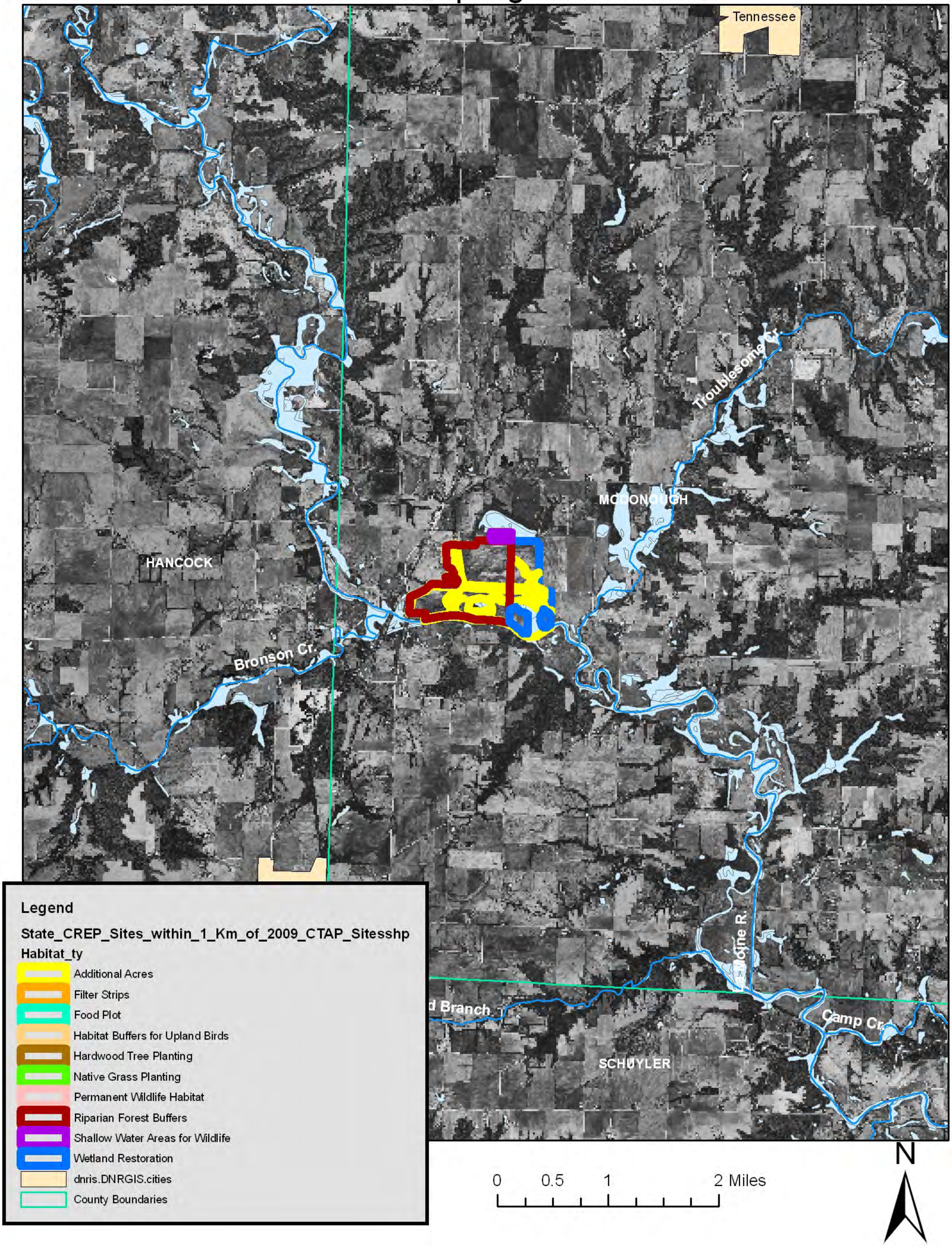
CREP Sampling Site #4



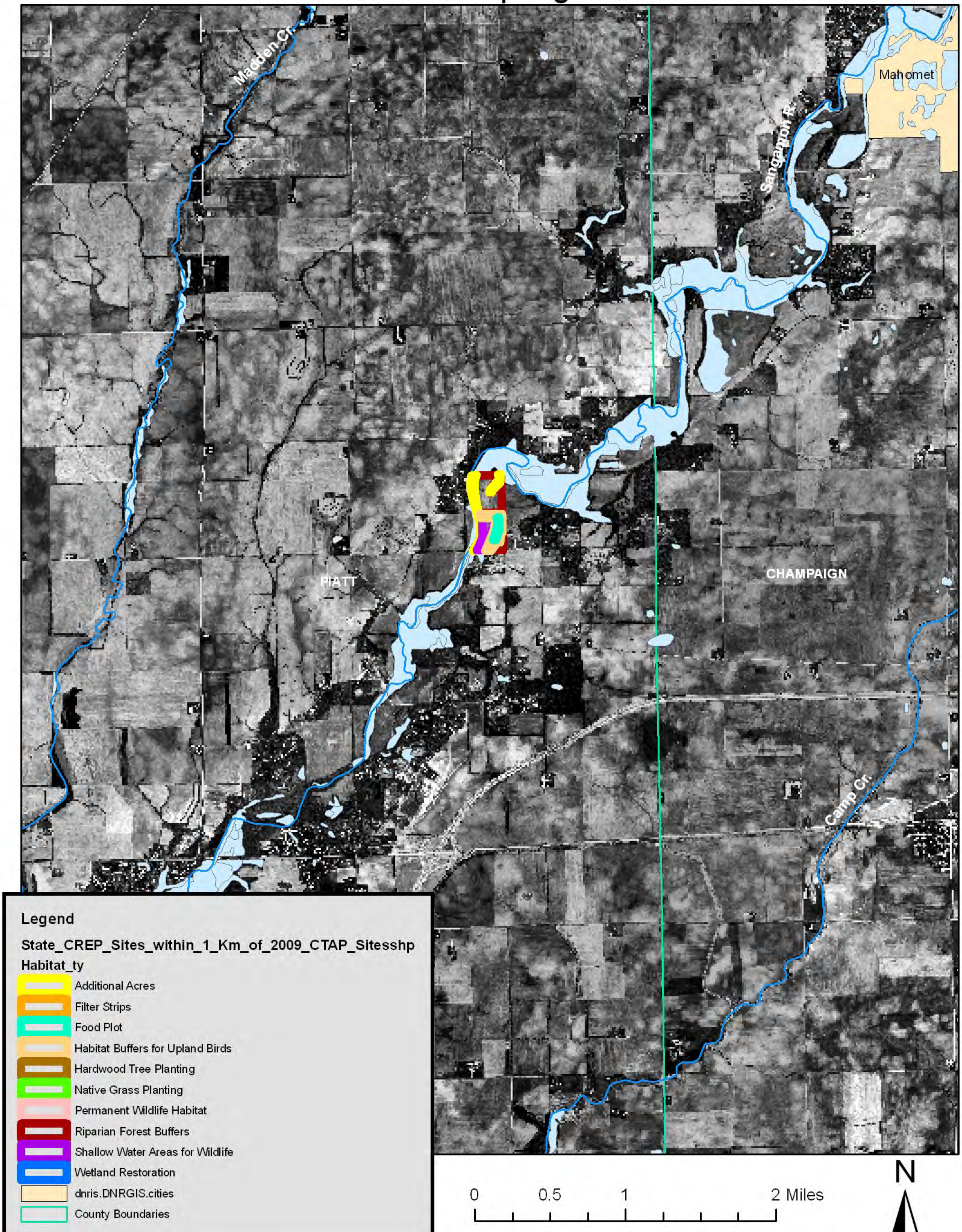
CREP Sampling Site #5



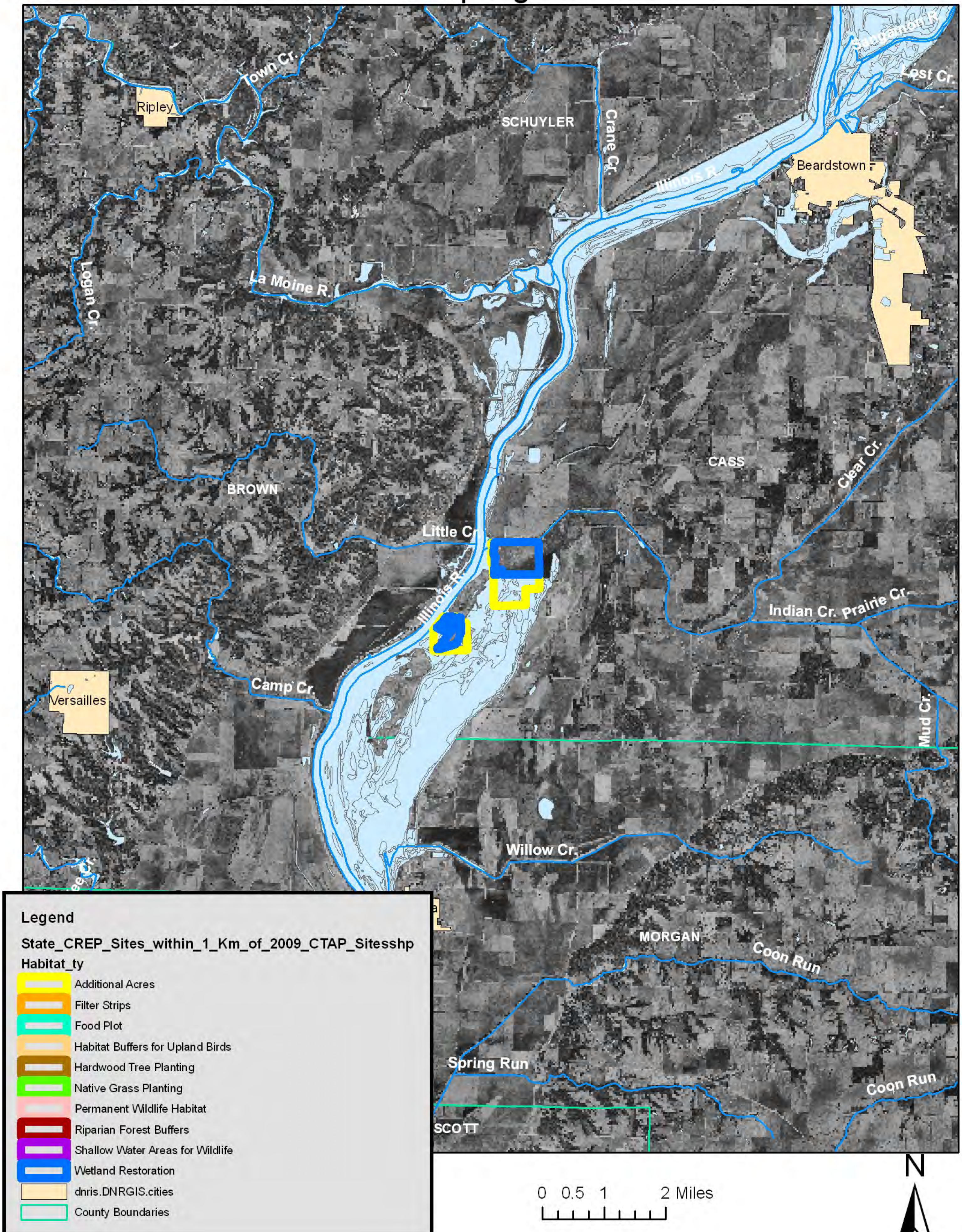
CREP Sampling Site #6a & b



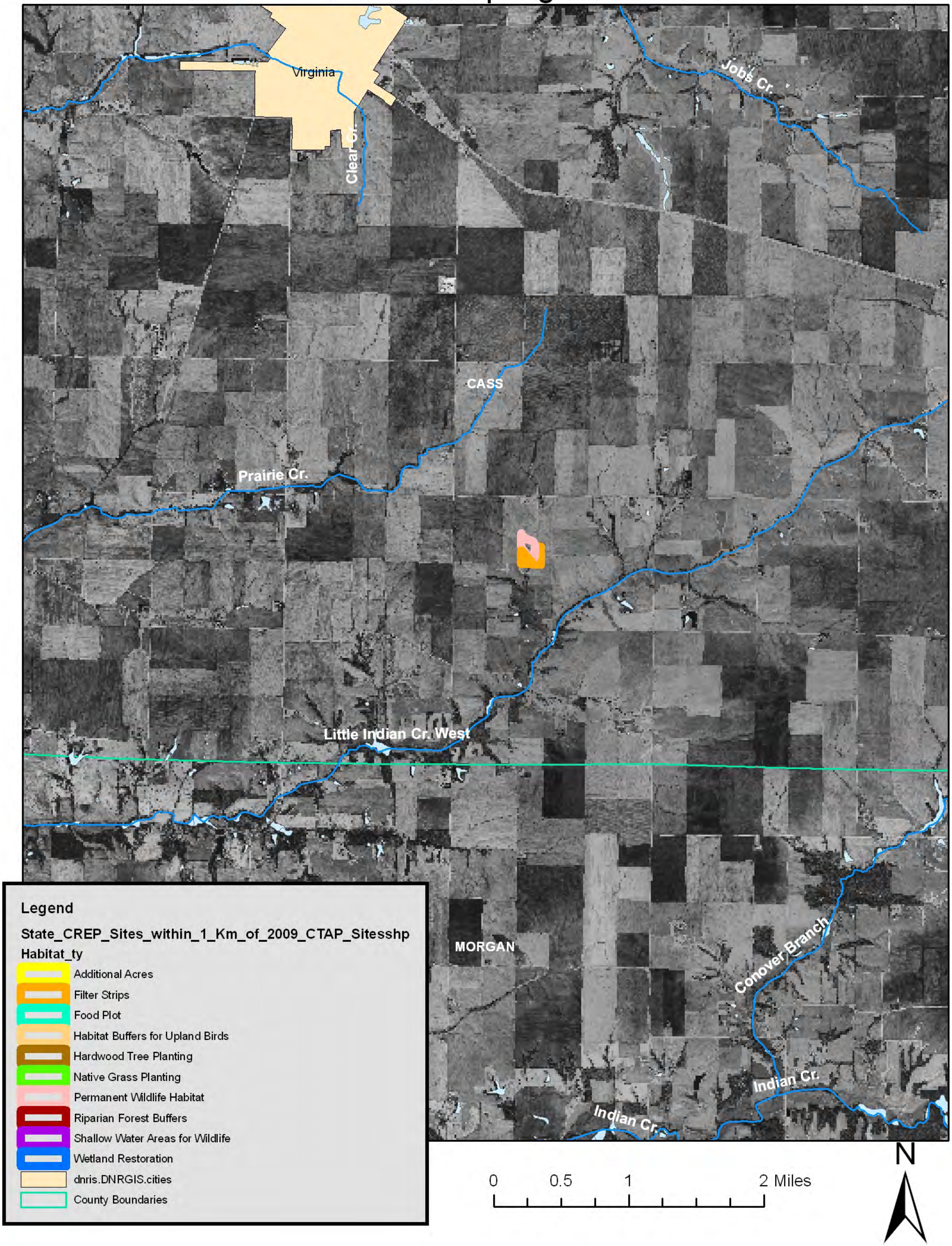
CREP Sampling Site #7



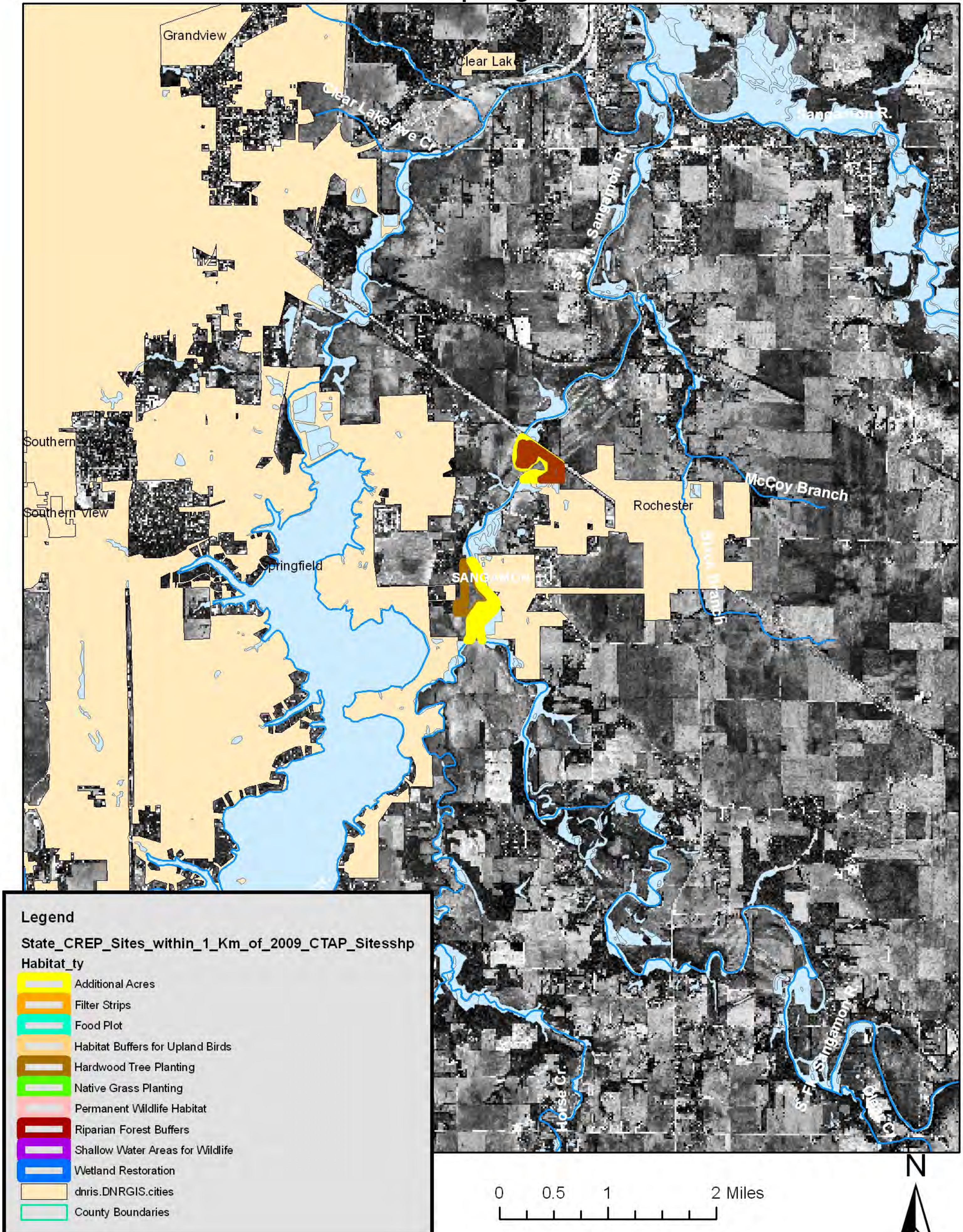
CREP Sampling Site #8a & b



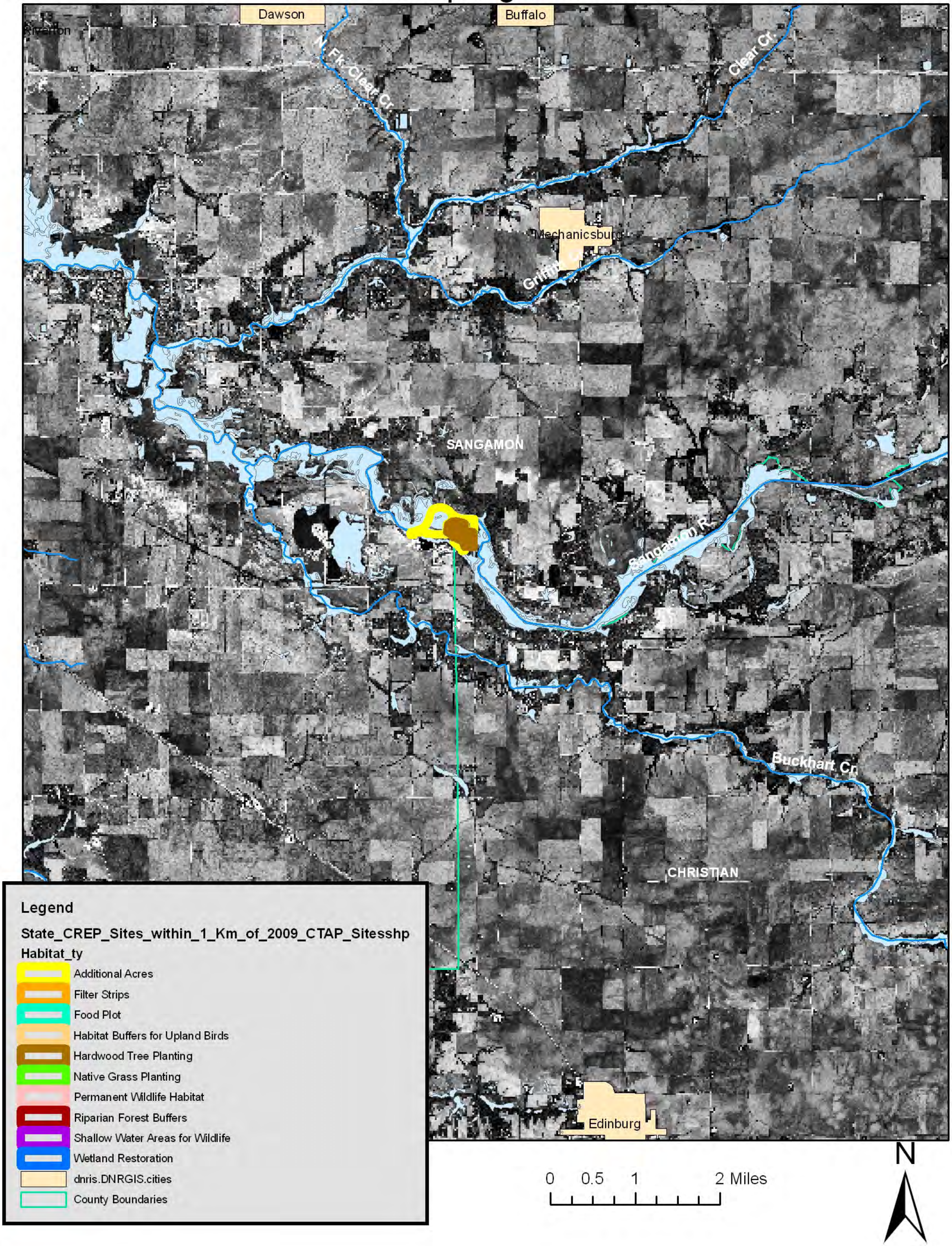
CREP Sampling Site #8c



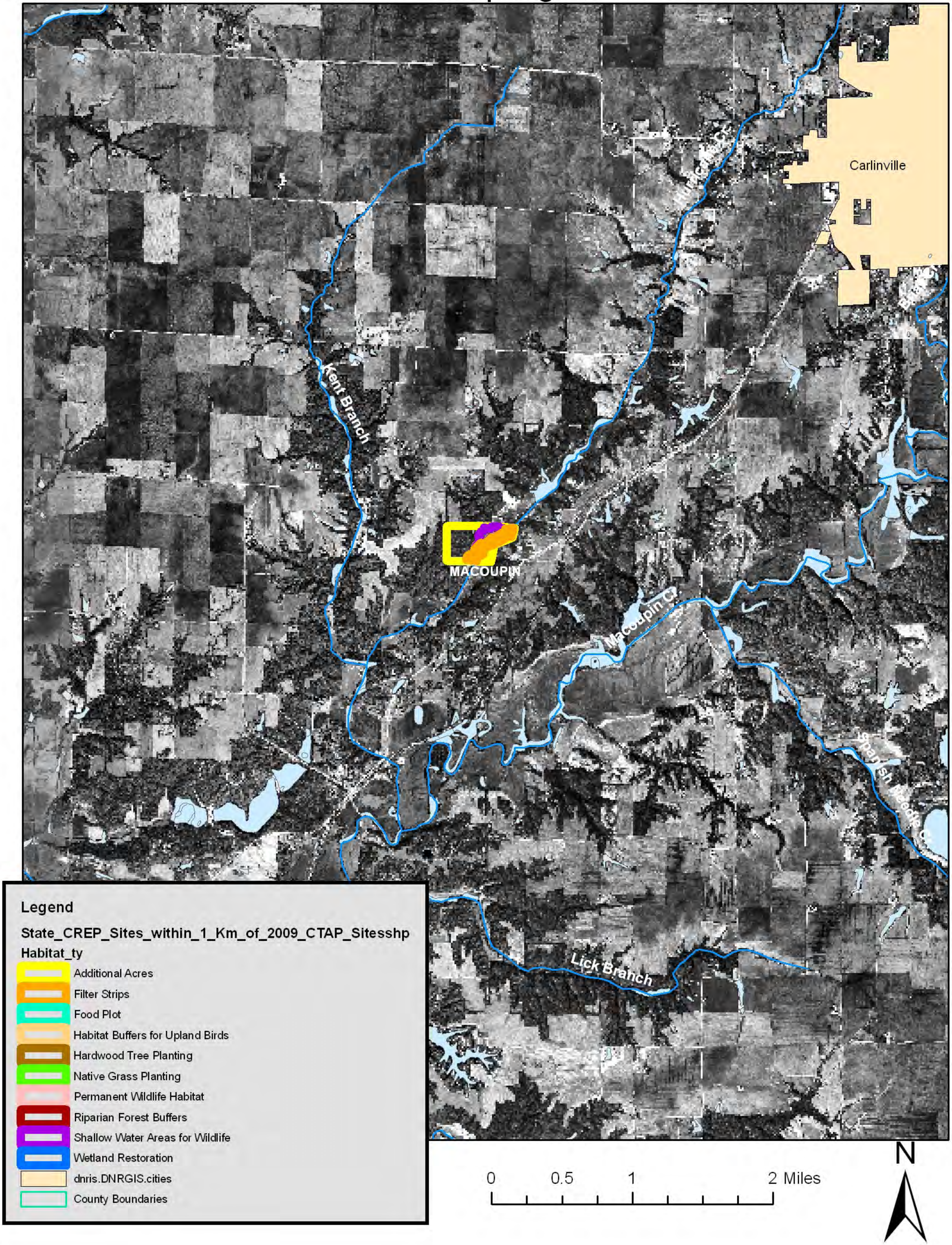
CREP Sampling Site #9a & b



CREP Sampling Site #10a & b



CREP Sampling Site #11



APPENDIX 2

2009 CREP/CTAP botanical assessment pilot study Monitoring Site Visit Photos

Site 1

Site 2a

Site 2b

Site 3

Site 4

Site 5 – No pictures taken.

Site 6a

Site 6b

Site 7

Site 8a - No Pictures due to area being flooded.

Site 8b



Site 8c



Site 9a



Site 9b



Site 10a


Site 10b


Site 11



APPENDIX 3

Site Descriptions and Species Lists

Site Number: 1
Landowner: Dave Diebel
County: Marshall
State ID: 20000460
Practices: CP4D (Permanent Wildlife Habitat, 120.4 acres)
Year implemented or enrolled: 2000

Date of Site Visit: 24 June 2009
Investigators: James Ellis, Timothy Rye
Duration of visit: Approximately 1.5 hours
Visit notes: Accessed site from road on east side; made a big loop walking through the mid-portion of the site; did not walk all the way to the west end.

General Vegetation Structure: Mostly tall broadleaf herbs with patches of trees.

Dominant plant species noted: Common goldenrod, black willow, eastern cottonwood, water smartweed

General notes: Much of the site is low in the landscape not far from Crow Creek. On the day of our visit, no standing water was noted, but some areas (large depressions, old ditches) had mucky, water-saturated soils. Plant species seemed to respond accordingly depending on soil drainage conditions (species noted below). There were also areas almost devoid of vegetation where water may have ponded in the spring. Trees have invaded the site in large patches and include cottonwood, black willow, and a couple of patches of black locust.

We noted a few species that were probably planted and include purple coneflower, yellow coneflower, Illinois bundleflower, and big bluestem. Autumn olive, a non-native invasive species, was noted, but most stems of this species seemed to be damaged from possible herbicide application.

The southern part of the site, south of an east-west ditch through the property, seems to be wetter than the majority of the site as evidenced by large patches of two invasive plant species—common reed and narrow-leaved cattail. We did not fully explore this part of the site, but areas of standing water were noted. Besides the patches of common reed and cattail, the vegetation in the south part was similar to the north.

Other notes: Evidence of white-tailed deer: tracks, trails, beds, and browsed vegetation. We flushed a mallard hen off a nest of eggs. Other birds noted include common yellow throat, red-winged blackbird, pheasant, and yellow breasted chat.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Species noted in drier areas:			
Acer saccharinum	silver maple	N	seedlings
Agrostis alba	red top	N	
Andropogon gerardii	big bluestem	N	patchy, occasional, planted?
Apocynum cannabinum	dogbane	N	
Asclepias syriaca	common milkweed	N	
Aster novae-angliae	New England aster	N	
Aster pilosus	hairy aster	N	
Aster puniceus	bristly aster	N	
Aster simplex	panicled aster	N	
Bromus inermis	Hungarian brome	I	
Cirsium arvense	field thistle	I	noxious weed
Desmanthus illinoensis	Illinois bundle flower	N	patchy, occasional, planted?
Echinacea purpurea	broad-leaved purple coneflower	N	patchy, occasional, planted?
Echinocloa sp.	barnyard grass	.	
Elaeagnus umbellata	autumn olive	I	invasive species, possibly some herbicide management/damage
Elymus villosus	silky wild rye	N	
Erigeron annuus	annual fleabane	N	
Euthamia graminifolia	grass-leaved goldenrod	N	
Festuca arundinacea	tall fescue	I	
Geum canadense	white avens	N	
Impatiens sp.	touch-me-not	N	
Laportea canadensis	Canada wood nettle	N	
Lonicera maackii	amur honeysuckle	I	invasive species
Melilotus sp.	sweet clover	I	
Morus alba	white mulberry	I	seedlings, invasive
Pastinaca sativa	wild parsnip	I	
Phleum pratense	timothy	I	
Poa pratensis	Kentucky blue grass	I	
Polygonum coccineum	water smartweed	N	dominant in wetter areas
Populus deltoides	eastern cottonwood	N	6-12 ft tall, patchy
Ratibida pinnata	yellow coneflower	N	patchy, occasional, planted?
Robinia pseudoacacia	black locust	N	couple of patches about 10 x 10m, 2-8 cm dbh
Rumex crispus	curly dock	I	
Salix nigra	black willow	N	10-12 ft tall, patchy
Solidago canadensis	Canada goldenrod	N	dominant
Solidago gigantea	late goldenrod	N	
Taraxacum officinale	common dandelion	I	
Vitis riparia	riverbank grape	N	
Wet areas:			
Asclepias incarnata	swamp milkweed	N	
Carex conjuncta	green-headed fox sedge	N	
Carex molesta	field oval sedge	N	
Carex vulpinoidea	brown fox sedge	N	
Eleocharis sp.	spike rush	N	

Equisetum arvense	common horsetail	N	dominant
Geum laciniatum	rough avens	N	
Helianthus sp.	Sunflower	N	
Juncus dudleyi	Dudley's rush	N	
Juncus torreyi	Torrey's rush	N	
Leersia oryzoides	rice cut grass	N	
Polygonum coccineum	water smartweed	N	
Ranunculus sceleratus	cursed crowfoot	N	
Rumex altissimus	pale dock	N	
Salix exigua	sandbar willow	N	
Scirpus atrovirens	dark green rush	N	
Scirpus fluviatilis	river bulrush	N	
Ulmus sp.	elm	N	seedlings
South part, additional species:			
Amorpha fruticosa	false indigo bush	N	
Carex vulpinoidea	brown fox sedge	N	
Eleocharis macrostachya	spike rush	N	
Phalaris arundinacea	reed canary grass	I	invasive
Phragmites australis	common reed	I	large, monotypic patches
Salix exigua	sandbar willow	N	
Salix nigra	black willow	N	
Scirpus atrovirens	dark green rush	N	
Scirpus pendulus	red bulrush	N	
Scirpus tabernaemontanii	soft-stem bulrush	N	
Typha angustifolia	narrow-leaved cattail	I	invasive

Site Number: 2a
Landowner: Big Water, LLC c/o Kurt Ehnle
County: Knox
State ID: 19990148
Practices: CP22 (Riparian Forest Buffer, 60.5 acres), CP23 (Wetland Restoration, 175.2 acres), ADD (additional acres, 125.7 acres)
Year implemented or enrolled: 1999

Date of Site Visit: 29 July 2009
Investigators: James Ellis, Jessica Forrest, Justin Ramey, Bridgette Moen
Duration of visit: Approximately 4 hours
Visit notes: Wide paths (eight to ten feet) mowed around edges of CREP fields as well as through the middle of larger fields allowed access. Fields assessed by walking these mowed paths on the east side of property. Used truck to drive into large (115 acre) field to make assessment.

General Vegetation Structure: All of the fields—no matter the practice—had a fairly even vegetation structure and composition. They were all very thick grass plantings that averaged about 3 to 5 ft tall. Some patches of eastern cottonwood and silver maple were noted, but these tree species did not dominate any of the fields.

Dominant plant species noted: Big bluestem, common goldenrod, and gama grass.

General notes: This is a very large property comprised of bottomland fields near and along Haw Creek (a tributary of the Spoon River). All of the fields looked like they were basically treated the same and planted into big bluestem and eastern gama grass. Many other native and non-native adventive species also populated the site as noted below.

A large patch of common reed was noted growing at the north end of 32.5-acre field. This species is an aggressive invader, and can easily dominate areas of disturbed wetland soil. This species should be controlled or eliminated from the site. Reed canary grass, another invasive plant species was noted on-site, but it was patchy in its distribution. This species should be monitored and controlled if necessary. Another invasive species, sericea lespedeza, was noted in the middle of the 115-acre field. This species should also be monitored and controlled if deemed necessary.

A few patches of adventive, native trees (silver maple and eastern cottonwood) were noted in some of the wettest areas of the largest fields. These are areas where water probably pools after heavy rains. These patches comprised a fairly small proportion of the overall site.

The constructed wetlands (areas that looked dug out) in the larger fields had standing water during our visit and were colonized with a variety of native wetland plants. Soil that looked like material that was removed to construct the wetlands were left piled nearby, but I'm not sure why.

Besides the access trails that were mowed, a large (about one acre) patch at the north end of the 53.2-acre field had been mown recently. It was not evident why such a patch was mowed.

The additional acres looked to be second growth forest, and these areas were not assessed.

Other notes: Lots of whitetail deer sign is present on this property (trails, scat, observed four deer during our visit). Frogs were readily evident along the creek and throughout the fields assessed (noted by song and sight). Birds noted include killdeer, green heron, and barn swallows. ***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Riparian Forest Buffer (7.3 ac field)			
Tripsacum dactyloides	gama grass	N	dominant
Andropogon gerardii	big bluestem	N	dominant
Solidago canadensis	Canada goldenrod	N	
Asclepias syriaca	common milkweed	N	
Panicum virgatum	prairie switch grass	N	
Phalaris arundinacea	reed canary grass	I	invasive species
Coronilla varia	crown vetch	I	
Urtica dioica	tall nettle	N	
Wetland Restoration (32.5 ac field)			
Acer saccharinum	silver maple	N	few thick patches near south end
Agrostis alba	red top	N	
Andropogon gerardii	big bluestem	N	dominant
Apocynum cannabinum	dogbane	N	
Asclepias incarnata	swamp milkweed	N	
Asclepias syriaca	common milkweed	N	
Bidens coronata	tall swamp marigold	N	
Bidens frondosa	common beggar's ticks	N	
Carex sp.	sedge	N	
Cirsium arvense	field thistle	I	invasive species
Cirsium discolor	pasture thistle	N	
Cyperus strigosus	long-scaled nut sedge	N	
Echinochloa crusgalli	barnyard grass	I	
Elaeagnus umbellata	autumn olive	I	invasive species, few plants noted
Erigeron annuus	annual fleabane	N	
Eupatorium serotinum	late boneset	N	
Juncus tenuis	path rush	N	
Leersia oryzoides	rice cut grass	N	
Lycopus virginicus	bugle weed	N	
Mimulus ringens	monkey flower	N	
Penthorum sedoides	ditch stonecrop	N	
Phalaris arundinacea	reed canary grass	I	invasive species
Phragmites australis	common reed	I	one big patch on north end
Solidago canadensis	Canada goldenrod	N	
Solidago gigantea	late goldenrod	N	
Tripsacum dactyloides	gama grass	N	
Verbena hastata	blue vervain	N	
Verbena urticifolia	white vervain	N	
Vernonia missurica	Missouri ironweed	N	

Xanthium strumarium	cocklebur	N	
Constructed wetland in 32.5 ac field			
Alisma plantago-aquatica	water plantain	N	
Carex lacustris	common lake sedge	N	
Conium maculatum	poison hemlock	I	few small patches
Eleocharis obtusa	blunt spike rush	N	
Lemna minor	small duckweed	N	
Lysimachia nummularia	moneywort	I	
Penthorum sedoides	ditch stonecrop	N	
Polygonum coccineum	water smartweed	N	
Salix nigra	black willow	N	
Scirpus tabernaemontanii	soft-stem bulrush	N	
Typha latifolia	broad-leaved cattail	N	
Riparian Forest Buffer (53.2 ac field)			
hilltop area:			
Ambrosia trifida	giant ragweed	N	
Aster pilosus	hairy aster	N	
Bromus inermis	Hungarian brome	I	
Bromus sp.	brome grass	.	
Cirsium discolor	pasture thistle	N	
Daucus carota	Queen Anne's lace	I	
Elymus virginicus	Virginia wild rye	N	
Rosa multiflora	Japanese rose	I	
Cirsium discolor	pasture thistle	N	
Solidago canadensis	Canada goldenrod	N	
bottomland area:			
Andropogon gerardii	big bluestem	N	
Eupatorium serotinum	late boneset	N	
Solidago canadensis	Canada goldenrod	N	
Tripsacum dactyloides	gama grass	N	
Vernonia missurica	Missouri ironweed	N	
wetter area in middle:			
Agrostis alba	red top	N	
Amorpha fruticosa	false indigo bush	N	few stems
Apocynum cannabinum	dogbane	N	
Asclepias syriaca	common milkweed	N	
Bidens frondosa	common beggar's ticks	N	
Bidens sp.	beggar's ticks	N	
Carex annectans	yellow sedge	N	
Carex tribuloides	awl-fruited oval sedge	N	
Daucus carota	Queen Anne's lace	I	
Echinocloa sp.	barnyard grass	.	
Elymus virginicus	Virginia wild rye	N	
Eupatorium serotinum	late boneset	N	
Hypericum pyramidatum	giant St. John's-wort	N	
Hypericum sp.	St. John's-wort	N	
Juncus tenuis	path rush	N	
Lycopus virginicus	bugle weed	N	
Mimulus ringens	monkey flower	N	
Phalaris arundinacea	reed canary grass	I	invasive species
Polygonum coccineum	water smartweed	N	
Populus deltoides	eastern cottonwood	N	8 - 12 ft tall

Rubus allegheniensis	common blackberry	N	
Scirpus atrovirens	dark green rush	N	
Solidago canadensis	Canada goldenrod	N	
Wetland Restoartion (115 ac field)			
Acer saccharinum	silver maple	N	few patches, 8 - 10 ft tall
Agrostis alba	red top	N	
Andropogon gerardii	big bluestem	N	dominant
Apocynum cannabinum	dogbane	N	
Asclepias incarnata	swamp milkweed	N	
Asclepias syriaca	common milkweed	N	
Bidens sp.	beggar's ticks	N	
Carex frankii	bristly cattail sedge	N	
Cassia fasciculata	partridge pea	N	large patches at north end
Daucus carota	Queen Anne's lace	I	
Eleocharis obtusa	blunt spike rush	N	
Erigeron annuus	annual fleabane	N	
Hypericum pyramidatum	giant St. John's-wort	N	
Impatiens capensis	spotted touch-me-not	N	
Lespedeza cuneata	silky bush clover	I	few plants
Panicum virgatum	prairie switch grass	N	
Penthorum sedoides	ditch stonecrop	N	
Phalaris arundinacea	reed canary grass	I	few patches
Phleum pratense	timothy	I	
Phyla lanceolata	fog fruit	N	
Alisma plantago-aquatica	water plantain	N	
Polygonum hydropiper	water pepper	I	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	patch in SW corner
Rumex crispus	curly dock	I	
Scirpus atrovirens	dark green rush	N	
Solidago canadensis	Canada goldenrod	N	
Teucrium canadense	germander	N	
Tripsacum dactyloides	gama grass	N	
Constructed wetland in 115 ac field:			
Ammannia coccinea	long-leaved ammannia	N	
Carex annectans	yellow sedge	N	
Carex molesta	field oval sedge	N	
Echinocloa sp.	barnyard grass	.	
Eleocharis obtusa	blunt spike rush	N	
Juncus dudleyi	Dudley's rush	N	
Lindernia dubia	false pimpernel	N	
Lythrum alatum	winged loosestrife	N	
Mimulus ringens	monkey flower	N	
Penthorum sedoides	ditch stonecrop	N	
Verbesina alternifolia	wingstem	N	
Wetland Restoration (22.9 ac field)			much the same as other fields
Andropogon gerardii	big bluestem	N	dominant
Asclepias syriaca	common milkweed	N	
Phalaris arundinacea	reed canary grass	I	
Silphium perfoliatum	cup plant	N	
Solidago canadensis	Canada goldenrod	N	

Tripsacum dactyloides	gama grass	N	dominant

Site Number: 2b
Landowner: Platt Family
County: Knox
State ID: 20020987
Practices: CP2 (Native Grass Planting, 2.5 acres), CP3A (Hardwood Tree Planting, 10 acres), CP12 (Wildlife Food Plot, 1.8 acres), CP23 (Wetland Restoration, 72.1 acres), CP22 (Riparian Forest Buffer, 39.6 acres), CP21 (Filter Strip, 2 acres)
Year implemented or enrolled: 2001

Date of Site Visit: 29 July 2009
Investigators: James Ellis, Jessica Forrest, Justin Ramey, Bridgette Moen.
Duration of visit: Approximately 3 hours
Visit notes: Most of the fields assessed from two-track access with cursory walks through practice fields to note dominant plant species and general vegetation structure. The 28.2 acre field on the west end of property not assessed due to limited access and time constraints.

General Vegetation Structure: Fields assessed had a fairly thick and diverse array of common, herbaceous, old-field plant species four to five feet tall. Five to ten foot tall planted oak and pine trees in some of the fields were evident as well as adventive tree species.

Dominant plant species noted: Common goldenrod was common throughout the fields along with the grass species tall fescue and Hungarian brome.

General notes: Scattered planted oaks (pin and bur) were noted in the 32.1 acre field and seemed to be doing well. Persimmon was also noted. Common goldenrod was thick in some places. Ten to twenty foot tall silver maple, eastern cottonwood, and black willow trees were scattered through the field, and they were more dense and taller in the central part of the field as well as along the southern edge near the creek. It looks like the creek floods this bottomland field regularly.

A wetland with standing water at the west end of the 32.1-acre field that spanned into the east end of the 40 acre field was inspected. Water seemed to be drawing down here leaving areas of open mud flats. A diverse mix of common wetland plant species had colonized the wetland as well as the invasive reed canary grass. A patch of what looked like Siberian elm was also noted at the edge of the wetland. Other wetland species noted on site were growing in the ditches along the two-track access road.

The 1.8-acre Wildlife Food Plot appeared not to have been planted and was dominated by Hungarian brome and common goldenrod. The 10-acre Hardwood Tree Planting appeared much the same except for six to eight foot tall, planted trees, which included oaks and white pine. These trees seemed healthy and growing well.

The 40-acre Wetland Restoration field was cursorily inspected from along the two-track access. The herbaceous vegetation was much the same as the 32.1-acre field. The oak and white pine trees planted here were much taller and robust (about 10 feet tall). Other adventive trees were also scattered—green ash, black cherry, eastern cottonwood, and eastern red cedar. Autumn olive, an invasive species, was also noted here.

The 2-acre Filter Strip field looked like a fallow field with tall fescue, common goldenrod, Hungarian brome, and other common species.

The 7.6 and 3.8-acre Riparian Forest Buffer fields again looked much the same as the other fields. Eight to ten foot tall white pines and scattered white oak trees seemed to be doing well.

The 2.5-acre Native Grass Planting looked again much like the other old fields dominated by common goldenrod. Planted prairie species noted include black-eyed Susan, switch grass, yellow coneflower, and purple coneflower.

Other notes: A mallard hen and ducklings as well as a small flock of about eight teal were noted in the wetlands. Evidence of whitetail deer was apparent.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Wetland Restoration (32.1 ac field)			
Acer saccharinum	silver maple	N	scattered
Apocynum cannabinum	dogbane	N	
Asclepias syriaca	common milkweed	N	
Aster pilosus	hairy aster	N	
Aster simplex	panicled aster	N	
Bromus inermis	Hungarian brome	I	
Cirsium discolor	pasture thistle	N	
Daucus carota	Queen Anne's lace	I	
Diospyros virginiana	persimmon	N	planted?
Erigeron annuus	annual fleabane	N	
Festuca arundinacea	tall fescue	I	
Juglans nigra	black walnut	N	
Juniperus virginiana	eastern red cedar	N	
Lactuca canadensis	wild lettuce	N	
Morus alba	white mulberry	I	invasive species
Pastinaca sativa	wild parsnip	I	
Phalaris arundinacea	reed canary grass	I	invasive species
Populus deltoides	eastern cottonwood	N	scattered
Prunella vulgaris	lawn prunella	I	
Prunus serotina	wild black cherry	N	
Quercus macrocarpa	burr oak	N	planted, 5 - 6 ft tall
Quercus palustris	pin oak	N	planted, 5 - 6 ft tall
Rubus allegheniensis	common blackberry	N	
Rubus occidentalis	black raspberry	N	
Rumex crispus	curly dock	I	
Salix nigra	black willow	N	near creek, 10 - 20 ft tall
Silphium perfoliatum	cup plant	N	

Solidago canadensis	Canada goldenrod	N	dominant
Ulmus pumila	Siberian elm	I	patch near west end, 20-25 stems, 6 - 8 ft tall
Ulmus rubra	slippery elm	N	
Verbena urticifolia	white vervain	N	
Vernonia missurica	Missouri ironweed	N	
Wetland plants in ditch along 2-track access lane			
Cicuta maculata	water hemlock	N	invasive species
Eupatorium perfoliatum	common boneset	N	
Helianthus grosseserratus	sawtooth sunflower	N	
Heliopsis helianthoides	false sunflower	N	
Impatiens capensis	spotted touch-me-not	N	
Juncus sp.	rush	N	
Phalaris arundinacea	reed canary grass	I	invasive species
Sagittaria latifolia	common arrowhead	N	
Scirpus atrovirens	dark green rush	N	
Scirpus tabernaemontanii	soft-stem bulrush	N	
Silphium perfoliatum	cup plant	N	
Constructed wetland on west end of 32.1 ac field and east end of 40 ac field			
Alisma plantago-aquatica	water plantain	N	
Ambrosia trifida	giant ragweed	N	
Aster simplex	panicled aster	N	
Bidens cernua	nodding bur marigold	N	
Bidens sp.	beggar's ticks	N	
Carex annectans	yellow fox sedge	N	
Carex molesta	field oval sedge	N	
Cyperus strigosus	long-scaled nut sedge	N	
Echinochloa sp.	Barnyard grass	.	
Eleocharis palustris	great spike rush	N	
Juncus nodosus	joint rush	N	
Leersia oryzoides	rice cut grass	N	
Lemna minor	small duckweed	N	
Penthorum sedoides	ditch stonecrop	N	
Phalaris arundinacea	reed canary grass	I	around edges, invasive species
Phyla lanceolata	fog fruit	N	
Rorippa palustris	marsh yellow cress	N	
Salix nigra	black willow	N	
Scirpus atrovirens	dark green rush	N	
Typha latifolia	broad-leaved cattail	N	
Food Plot (1.8 ac field)			
Aster pilosus	hairy aster	N	
Bromus commutatus	hairy brome	I	
Bromus inermis	Hungarian brome	I	
Carduus nutans	musk bristle thistle	I	invasive species, sprayed with herbicide?
Erigeron annuus	annual fleabane	N	
Festuca arundinacea	tall fescue	I	
Solidago canadensis	Canada goldenrod	N	

Hardwood Tree Planting (10 ac field)			
Ambrosia trifida	giant ragweed	N	
Asclepias syriaca	common milkweed	N	
Aster pilosus	hairy aster	N	
Bromus inermis	Hungarian brome	I	
Cirsium arvense	field thistle	I	invasive species
Cirsium discolor	pasture thistle	N	
Erigeron annuus	annual fleabane	N	
Festuca arundinacea	tall fescue	I	
Gleditsia triacanthos	honey locust	N	
Morus alba	white mulberry	I	few stems, 8 ft tall
Pastinaca sativa	wild parsnip	I	
Pinus strobus	white pine	N	8-10 ft tall
Quercus macrocarpa	burr oak	N	2-8 ft tall
Quercus velutina	black oak	N	2-8 ft tall
Rudbeckia laciniata	wild golden glow	N	
Rumex altissimus	pale dock	N	
Solidago canadensis	Canada goldenrod	N	
Verbena stricta	hoary vervain	N	
Verbena urticifolia	white vervain	N	
Wetland Restoration (40 ac field)			
Bromus inermis	Hungarian brome	I	
Elaeagnus umbellata	autumn olive	I	invasive species
Fraxinus pennsylvanica	red ash	N	
Juniperus virginiana	eastern red cedar	N	
Pinus strobus	white pine	N	planted, 10 ft tall
Populus deltoides	eastern cottonwood	N	
Prunus serotina	wild black cherry	N	
Quercus macrocarpa	burr oak	N	planted, 10 ft tall
Solidago canadensis	Canada goldenrod	N	
Filter Strip (2 ac field)			
Bromus commutatus	hairy brome	I	
Bromus inermis	Hungarian brome	I	
Erigeron annuus	annual fleabane	N	
Festuca arundinacea	tall fescue	I	
Melilotus alba	white sweet clover	I	
Pastinaca sativa	wild parsnip	I	
Solanum carolinense	horse nettle	N	
Solidago canadensis	Canada goldenrod	N	
Trifolium pratense	red clover	I	
Riparian Forest Buffer (7.6 ac field)			
Aster pilosus	hairy aster	N	
Bromus inermis	Hungarian brome	I	
Monarda fistulosa	wild bergamot	N	
Pastinaca sativa	wild parsnip	I	
Pinus strobus	white pine	N	planted, 8-10 ft tall
Quercus alba	white oak	N	planted
Solidago canadensis	Canada goldenrod	N	
Prairie Planting (2.5 ac field)			

Echinacea purpurea	broad-leaved purple coneflower	N	
Panicum virgatum	prairie switch grass	N	
Rudbeckia hirta	black-eyed Susan	N	
Solidago canadensis	Canada goldenrod	N	dominant
Tripsacum dactyloides	gama grass	N	scattered

Site Number: 3
Landowner: Evelyne Lemenager
County: Iroquois
State ID: 19990143
Practices: CP22 (Riparian Forest Buffer, 43.8 acres)
Year implemented or enrolled: 1999

Date of Site Visit: 2 July 2009
Investigators: James Ellis, Jessica Forrest, Justin Ramey, Valerie Njapa, Martin St Aubin, Thad Eshleman
Duration of visit: Approximately 1.5 hours
Visit notes: Fairly small site (43 acres); site inspection limited to walking on the west side of creek. Much of site was being mowed on the day of the site visit to knock down tall vegetation between the rows of planted trees. Mowing was halted during our visit because the operator got the tractor stuck in the mud.

General Vegetation Structure: Much of the site characterized by three to five foot tall herbaceous vegetation which includes grasses and other forbs but mostly dominated by giant ragweed. Rows of planted trees were evident because of the tall (8-10 feet) sycamore and green ash trees, which were probably some of the species originally planted. Other hardwood species, including oaks and hickories, were evident but much shorter (2-3 feet). Taller trees, mostly black willow, were noted on the east side of the creek.

Dominant plant species noted: Large patches of giant ragweed dominated much of the bottomland/floodplain portion of the site. Many other species of common sedges, rushes, and wetland plant were also evident. On the hillsides above the bottomland area, Hungarian brome, wild parsnip, and field thistle dominated along with a mix of other common, weedy forbs.

General notes: Thad Eshleman, Iroquois County District Conservationist, provided important observations: the site was planted to trees in 2005, the creek floods and the site is inundated with water regularly, and site classified as marginal pastureland without any evidence that a crop was ever grown here. This year was very wet as well. There were areas of wet, mucky soils on the day of the site visit in many low areas close to the creek.

Other notes: Some bird species noted include common yellowthroat. dickcissel, and eastern kingbird. Tracks and trails made by white-tailed deer were also noted.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Bottomland area:			
Acer saccharinum	silver maple	N	seedlings
Acorus calamus	sweet flag	I	
Agrostis alba	red top	N	
Amaranthus sp.	pigweed	.	

Ambrosia artemisiifolia	common ragweed	N	
Ambrosia trifida	giant ragweed	N	
Asclepias syriaca	common milkweed	N	
Aster simplex	panicled aster	N	
Carex annectans	yellow fox sedge	N	
Carex conjuncta	green-headed fox sedge	N	
Carex davisii	awned graceful sedge	N	
Carex frankii	bristly cattail sedge	N	
Carex sparganioides	loose-headed bracted sedge	N	
Carya sp.	hickory	N	planted
Cirsium arvense	field thistle	I	invasive species
Cirsium vulgare	bull thistle	I	
Conyza canadensis	horseweed	N	
Echinochloa crusgalli	barnyard grass	I	
Elymus virginicus	Virginia wild rye	N	
Erigeron annuus	annual fleabane	N	
Geum canadense	white avens	N	
Geum laciniatum	rough avens	N	
Gymnocladus dioicus	Kentucky coffee tree	N	planted
Hordeum jubatum	squirrel-tail grass	I	
Juglans nigra	black walnut	N	planted
Juncus dudleyi	Dudley's rush	N	
Leersia oryzoides	rice cut grass	N	
Phalaris arundinacea	reed canary grass	I	invasive species
Phleum pratense	timothy	I	
Plantago lanceolata	English plantain	I	
Poa compressa	Canadian blue grass	I	
Quercus sp.	oak	N	planted
Rorippa palustris	marsh yellow cress	N	
Rumex crispus	curly dock	I	
Solidago canadensis	Canada goldenrod	N	
Trifolium repens	white clover	I	
Vernonia gigantea	tall iron weed	N	
Vernonia missurica	Missouri ironweed	N	
Veronica peregrina	purslane speedwell	N	
Riparian strip along creek:			
Acorus calamus	sweet flag	I	
Asclepias incarnata	swamp milkweed	N	
Aster pilosus	hairy aster	N	
Bidens sp.	beggar's ticks	N	
Carex molesta	field oval sedge	N	
Carex molesta	field oval sedge	N	
Carex sparganioides	loose-headed bracted sedge	N	
Gleditsia triacanthos	honey locust	N	small trees
Morus alba	white mulberry	I	
Phalaris arundinacea	reed canary grass	I	
Platanus occidentalis	buttonwood	N	8-10 ft tall
Quercus sp.	oak	N	small trees, 2-3 ft tall
Salix nigra	black willow	N	small trees
Solidago gigantea	late goldenrod	N	
Hillside above bottom:			
Achillea millefolium	common milfoil	I	
Agropyron repens	quack grass	I	

Asclepias syriaca	common milkweed	N	
Bromus inermis	Hungarian brome	I	
Cirsium arvense	field thistle	I	few thick patches, invasive species
Daucus carota	Queen Anne's lace	I	
Lepidium campestre	field cress	I	
Pastinaca sativa	wild parsnip	I	
Phleum pratense	timothy	I	
Plantago lanceolata	English plantain	I	
Poa pratensis	Kentucky blue grass	I	
Verbena urticifolia	white vervain	N	

Site Number: 4
Landowner: Alma Jean French
County: McLean County
State ID: 20000273
Practices: CP22 (Riparian Forest Buffer, 11.1 acres)
Year implemented or enrolled: 2000

Date of Site Visit: 24 June 2009
Investigators: James Ellis and Timothy Rye
Duration of visit: Approximately 1.5 hours
Visit notes: We stopped and talked to Ms. French to find site access—two-track access from the west south of creek.

General Vegetation Structure: The fields assessed were characterized by herbaceous forbs four to five feet tall and patches of adventive trees ten too twenty feet tall.

Dominant plant species noted: Common goldenrod, eastern cottonwood, wild parsnip, and annual fleabane dominated the fields.

General notes: The site is roughly divided in half by an east-west drainage ditch. The north field is larger than the south field. Large eastern cottonwood trees along with some silver maple and black willow line the ditch. In the south section, we noted some 4-5 foot tall oak trees that were probably planted as part of the conservation practice. Large patches of 10-20 foot tall cottonwood trees were growing throughout this field. We estimated many dozens of stems.

The north field looked much the same with similar dominant species and scattered cottonwood trees along with other scattered tree and shrub species. Woody species were largely absent in large patches dominated by common goldenrod. Small walnut or butternut, swamp white oak, and bur oak trees were noted as scattered in the north field. We noted at least twenty 3-4 foot tall hardwood tree species that were planted as part of the conservation practice. They were not very obvious but be could found if observant. Some larger, mature trees like black walnut, hackberry, white mulberry, and Osage orange, were present along the creek on the west side of the field. Patches of invasive weeds such as field thistle and reed canary grass were also present.

Other notes: An approximately ten foot wide strip of ground south the ditch looks like it was disturbed with a disc probably in 2008 and corn stubble was noted in the strip. A deer stand was noted in a cottonwood tree along the ditch. Some mowed trails were being maintained along edge of fields.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
South Unit:			
Aster shortii	short's aster	N	
Aster simplex	panicled aster	N	

Bromus inermis	Hungarian brome	I	
Elymus villosus	silky wild rye	N	
Equisetum arvense	common horsetail	N	
Erigeron annuus	annual fleabane	N	dominant
Festuca arundinacea	tall fescue	I	
Geum canadense	white avens	N	
Helianthus sp.	Sunflower	N	
Melilotus alba	white sweet clover	I	
Pastinaca sativa	wild parsnip	I	dominant
Populus deltoides	eastern cottonwood	N	dominant
Rumex crispus	curly dock	I	
Solidago canadensis	common goldenrod	N	dominant
Ulmus americana	American elm	N	
Vernonia missurica	Missouri ironweed	N	
North Unit:			
Asclepias syriaca	common milkweed	N	
Aster pilosus	hairy aster	N	
Aster simplex	panicled aster	N	
Bromus inermis	Hungarian brome	I	
Bromus japonicus	Japanese chess	I	
Carex sparganioides	loose-headed bracted sedge	N	
Cirsium arvense	field thistle	I	small patches, invasive species
Cornus drummondii	rough-leaved dogwood	N	
Coronilla varia	crown vetch	I	
Dactylis glomerata	orchard grass	I	
Elaeagnus umbellata	autumn olive	I	scattered, invasive species
Erigeron annuus	annual fleabane	N	
Juglans sp.	walnut	N	planted
Juncus tenuis	path rush	N	
Lactuca canadensis	wild lettuce	N	
Lonicera maackii	amur honeysuckle	I	scattered, invasive species
Maclura pomifera	Osage orange	I	
Medicago lupulina	black medic	I	
Melilotus officinalis	yellow sweet clover	I	
Morus alba	white mulberry	I	
Pastinaca sativa	wild parsnip	I	dominant
Phleum pratense	timothy	I	
Plantago rugelii	red-stalked plantain	N	
Poa pratensis	Kentucky blue grass	I	
Polygonum coccineum	water smartweed	N	
Populus deltoides	eastern cottonwood	N	dominant
Prunus serotina	wild black cherry	N	
Ptelea trifoliata	wafer ash	N	
Quercus bicolor	swamp white oak	N	planted
Quercus imbricaria	jack oak	N	
Quercus macrocarpa	burr oak	N	planted
Rhus glabra	smooth sumac	N	
Solidago canadensis	common goldenrod	N	dominant
Toxicodendron radicans	poison ivy	N	

Trifolium pratense	red clover	I
Trifolium repens	white clover	I
Ulmus americana	American elm	N

Site Number: 5
Landowner: Winters Family Trust c/o Frances Winters, trustee
County: Hancock County
State ID: 20010583
Practices: CP22 (Riparian Forest Buffer, 73.1 acres)
Year implemented or enrolled: 2001

Date of Site Visit: 23 July 2009
Investigators: Timothy Rye
Duration of visit: Approximately 2 hours

General Vegetation Structure: Old fields in floodplain of Bronson Creek dominated by herbaceous vegetation with scattered, small trees.

Dominant plant species noted: Reed canary grass

General notes: The site is roughly divided in half by a ditch and berm that runs north and south through the site. The east half is larger than the west half, and the vegetation composition and structure are nearly identical. The east field has a number of small wetlands populated by spike rush, common arrowhead, and water plantain. Both sites heavily invaded by reed canary grass. Most of the botanical diversity was found in disturbed areas especially where part of the berm had eroded away and in the wetter areas.

There were hardwood tree plantings in both sections that looked relatively undisturbed although sycamore is increasing in density in the southern parts of the east field. Hardwood trees noted consisted of bur oak, chinkapin oak and some pin oak as well.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Abutilon theophrasti	buttonweed	I	
Acer saccharinum	silver maple	N	
Achillea millefolium	common milfoil	I	
Agrostis alba	red top	N	
Alisma plantago-aquatica	water plantain	N	
Ambrosia trifida	giant ragweed	N	
Arctium minus	common burdock	I	
Asclepias incarnata	swamp milkweed	N	
Asclepias syriaca	common milkweed	N	
Aster simplex	panicled aster	N	
Bidens sp.	beggar's ticks	N	
Carex vulpinoidea	brown fox sedge	N	
Cicuta maculata	water hemlock	N	
Cirsium discolor	pasture thistle	N	
Cyperus strigosus	long-scaled nut sedge	N	
Datura stramonium	jimsonweed	I	
Daucus carota	Queen Anne's lace	I	

Eleocharis obtusa	blunt spike rush	N	
Erigeron annuus	annual fleabane	N	
Eupatorium serotinum	late boneset	N	
Festuca arundinacea	tall fescue	I	
Fraxinus pennsylvanica	green ash	N	
Gleditsia triacanthos	honey locust	N	
Hibiscus trionum	flower-of-an-hour	I	
Hordeum jubatum	squirrel-tail grass	I	
Hypericum punctatum	spotted St. John's-wort	N	
Juglans cinerea	butternut	N	planted
Juncus interior	inland rush	N	
Lycopus americanus	common water horehound	N	
Lythrum alatum	winged loosestrife	N	
Maclura pomifera	Osage orange	I	
Medicago sativa	alfalfa	I	
Monarda fistulosa	wild bergamot	N	
Morus alba	white mulberry	I	
Pastinaca sativa	wild parsnip	I	invasive
Penthorum sedoides	ditch stonecrop	N	
Phalaris arundinacea	reed canary grass	I	invasive
Phleum pratense	timothy	I	
Phytolacca americana	pokeweed	N	
Plantago lanceolata	English plantain	I	
Platanus occidentalis	sycamore	N	
Poa sylvestris	woodland blue grass	N	
Polygonum amphibium	water knotweed	N	
Polygonum lapathifolium	curttop lady's thumb	N	
Quercus imbricaria	shingle oak	N	
Quercus macrocarpa	burr oak	N	planted
Quercus muhlenbergii	chinquapin oak	N	planted
Quercus palustris	pin oak	N	planted
Rudbeckia hirta	black-eyed Susan	N	
Rumex altissimus	pale dock	N	
Sagittaria latifolia	common arrowhead	N	
Salix nigra	black willow	N	
Sambucus canadensis	common elder	N	
Solanum carolinense	horse nettle	N	
Solanum cornutum	buffalo bur	I	
Solidago canadensis	Canada goldenrod	N	
Typha latifolia	broad-leaved cattail	N	
Urtica dioica	tall nettle	N	
Verbena hastata	blue vervain	N	
Verbena stricta	hoary vervain	N	
Xanthium strumarium	cocklebur	N	

Site Number: 6a
Landowner: Bill Heap
County: McDonough County
State ID: 20010811
Practices: CP22 (Riparian Forest Buffer, 248.5 acres), CP9 (Shallow Water Areas for Wildlife, 5 acres), ADD (Additional Acres, 63.6 acres)
Year implemented or enrolled: 2001

Date of Site Visit: 2 September 2009
Investigators: James Ellis, Jessica Forrest, Valerie Njapa
Duration of visit: Approximately 2 hours
Visit notes: Due to limited time and access, a cursory inspection of this site was made. Assessment of the site was made from a levee and quick forays into the fields. The site is broken into three sections: two areas on the east side divided by a levee that runs east and west and a field on the west side separated from the other part of the property by a thin strip of forest. The CP9 practice on the north side of the property was not inspected. The west field was accessed and quickly inspected from IL 61.

General Vegetation Structure: A large proportion of the fields inspected were dominated by native, adventive tree species that appeared to be from 8 to 10 feet tall. In some places the trees were thick enough to shade out any herbaceous vegetation. Trees were more numerous in the south field than in the north field. Trees were thicker on the east and south sides of the west field. Low, weedy grasses and forbs characterized open areas.

Dominant plant species noted: Silver maple and eastern cottonwood were the dominant tree species and reed canary was the most common herbaceous species.

General notes: This site appears to be flooded regularly by the LaMoine River, which borders the south edge of the property. On the day of our visit, there were areas of wet, saturated soil (muddy) and some areas of standing water noted. Much of site is dominated by fairly tall (8-10 feet) silver maple with some eastern cottonwood and a few scattered sycamore trees. There is no evidence of any planted trees as part of the conservation practice on this site, but some fairly large (10-12 feet tall) pin oaks (*Quercus palustris*) were noted in the south field. Mature cottonwoods and silver maple looked to dominate the remnant of floodplain forest in middle of the south field.

A strip of disturbed soil around the edge of each field looked like it had been worked with a disc earlier in the year. Corn about two feet tall was noted growing in these disturbed strips. There were also mowed strips through and around each field as well.

Standing water was noted in the ditch on the north side of the levee. Another area of about an acre of open water was in the southwest corner of the 119-acre (north) field ringed by black willow (*Salix nigra*).

Other notes: Patches of big bluestem (*Andropogon gerardii*) was noted in the middle of the west field. We assume that this species was planted. Bird species noted included great blue heron, great egret, and green heron. Lots of dragonfly species, especially green darner, were noted during the site visit.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Many of the same species were common throughout the property, only those species noted as new are listed for the north and west fields. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
South of levee:			
Abutilon theophrasti	buttonweed	I	
Acer saccharinum	silver maple	N	8-10 ft tall
Amaranthus sp.	pigweed	.	
Apocynum cannabinum	dogbane	N	
Bidens sp.	beggar's ticks	N	
Cyperus strigosus	long-scaled nut sedge	N	
Eupatorium serotinum	late boneset	N	
Fraxinus pennsylvanica	red ash	N	
Iva annua	marsh elder	N	
Lycopus americanus	common water horehound	N	
Morus alba	white mulberry	I	
Phalaris arundinacea	reed canary grass	I	invasive
Phyla lanceolata	fog fruit	N	
Populus deltoides	eastern cottonwood	N	few, scattered
Quercus palustris	pin oak	N	10-12 ft tall
Setaria glauca	pigeon grass	I	
Sida spinosa	prickly sida	I	
Solidago canadensis	common goldenrod	N	
Ulmus americana	American elm	N	
Vitis riparia	riverbank grape	N	
North of levee (additional species):			
Asclepias incarnata	swamp milkweed	N	
Carex annectans	yellow fox sedge	N	
Carex lupulina	common hop sedge	N	
Cephalanthus occidentalis	buttonbush	N	
Elymus virginicus	Virginia wild rye	N	
Gleditsia triacanthos	honey locust	N	
Prunus serotina	wild black cherry	N	
Ptelea trifoliata	wafer ash	N	
Sagittaria latifolia	common arrowhead	N	
Salix nigra	black willow	N	
Scirpus pendulus	red bulrush	N	
Solidago gigantea	late goldenrod	N	
Spartina pectinata	prairie cord grass	N	
Urtica dioica	tall nettle	N	
West field (additional species):			
Andropogon gerardii	big bluestem	N	patches in middle
Helenium autumnale	sneezeweed	N	
Platanus occidentalis	sycamore	N	few

Site Number: 6b
Landowner: Gail Flowers and Janice Grigsby
County: McDonough County
State ID: 20010830
Practices: CP23 (Wetland Restoration, 111.6 acres) and ADD (Additional Acres, 41.3 acres)
Year implemented or enrolled: 2001

Date of Site Visit: 2 September 2009
Investigators: James Ellis, Jessica Forrest, Valerie Njapa
Duration of visit: Approximately 4 hours
Visit notes: We met and chatted with the farm manager, Jerry Cremer, who told us a few details about the site, flooding problems, and problems with a beaver dam holding back too much water. This is a fairly large property with multiple fields, so much of the site assessment was made by driving or walking along the levees on-site with cursory walks into parts of the fields. All of the fields were assessed except for the 16.2 acre field in the far southern part of the property.

General Vegetation Structure: The vegetation on most of the fields was structured by 4-6 foot tall planted hardwood trees and adventive floodplain tree species that were mostly taller (8-10 feet). A wide variety of common, herbaceous plant species from one to five feet tall were evident over most of the fields inspected.

Dominant plant species noted: Silver maple, eastern cottonwood, sycamore, green ash, reed canary grass, various sedges, tall boneset, common goldenrod, foxtail grass, and various oak species (planted).

General notes: Fairly large property with a number of separate fields separated by levees, ditches, and an oxbow and floodplain forest remnant adjacent to the LaMoine River. The LaMoine marks the southern boundary of the property, and the whole site can be characterized as bottomland formed by the LaMoine River. The fields on the south end closer to the river experience the most impact from flood events, and this year (2009) has been fairly wet.

It appears that hardwood trees (mostly oak species) were planted in each of the fields as part of the conservation practice, and these trees appear healthy and doing well in the fields inspected. We suspect that larger tree stock or RPM trees were used on this site.

Native, adventive floodplain tree species like silver maple, sycamore, and eastern cottonwood have populated the site and generally overtop the hardwood trees planted. These species are most dense in the southern fields closer to the river where flood waters likely stand for longer than in the other fields. We suspect that the fields to the north of the levee did not flood or only experienced minor disturbance from flood waters. Localized areas near the ditches obviously flooded based on patches of sparse vegetation, shorter vegetation, and wetland plant species growing in areas of saturated soil.

Other notes: Extensive evidence of whitetail deer including trails and browse damage on trees and other herbaceous (particularly *Aster* spp.).

Grigsby Marsh Land and Water Reserve, a natural area owned by the IDNR, is directly adjacent to and north of this property. That property was once owned by the Grigsby family before being acquired by the IDNR.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
7.6 acre field:			
Acer saccharinum	silver maple	N	seedlings
Echinochloa sp.	barnyard grass	.	
Elymus virginicus	Virginia wild rye	N	
Eupatorium serotinum	late boneset	N	
Iva annua	marsh elder	N	
Lysimachia nummularia	moneywort	I	
Phalaris arundinacea	reed canary grass	I	invasive
Platanus occidentalis	sycamore	N	8-10 ft tall
Polygonum coccineum	water smart weed	N	
Quercus macrocarpa	burr oak	N	6 ft tall
Quercus palustris	pin oak	N	
Salix exigua	sandbar willow	N	
Setaria glauca	pigeon grass	I	
Solidago gigantea	late goldenrod	N	
5.3 acre field:			
Acer saccharinum	silver maple	N	seedlings
Agrostis alba	red top	N	
Amaranthus sp.	pigweed	.	
Asclepias syriaca	common milkweed	N	
Aster simplex	panicled aster	N	
Carex annectans	yellow fox sedge	N	
Carex lupulina	common hop sedge	N	
Carex sp.	sedges	N	
Cephalanthus occidentalis	buttonbush	N	
Cyperus strigosus	long-scaled nut sedge	N	
Echinochloa sp.	barnyard grass	.	
Eupatorium serotinum	late boneset	N	
Fraxinus pennsylvanica	green ash	N	
Platanus occidentalis	sycamore	N	
Populus deltoides	eastern cottonwood	N	
Quercus bicolor	swamp white oak	N	planted, larger stock
Quercus macrocarpa	burr oak	N	planted, larger stock
Setaria glauca	pigeon grass	I	
Solidago canadensis	common goldenrod	N	
Taxodium distichum	bald cypress	N	planted, 2-3 ft tall
6 acre field:			
Bidens sp.	beggar's ticks	N	
Carex annectans	yellow fox sedge	N	
Carex lupulina	common hop sedge	N	
Carex sp.	sedges	N	
Carex typhina	common cattail sedge	N	
Cephalanthus occidentalis	buttonbush	N	

Cyperus strigosus	long-scaled nut sedge	N	
Diospyros virginiana	persimmon	N	planted, 6-8 ft tall
Echinochloa sp.	barnyard grass	.	
Eupatorium serotinum	late boneset	N	
Fraxinus pennsylvanica	green ash	N	adventive, 3-4 ft tall
Leersia lenticularis	catchfly grass	N	
Phalaris arundinacea	reed canary grass	I	invasive
Platanus occidentalis	buttonwood	N	10-12 ft tall
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	adventive, 3-4 ft tall
Quercus bicolor	swamp white oak	N	planted, 6-8 ft tall
Quercus macrocarpa	burr oak	N	planted, 6-8 ft tall
Setaria faberi	giant foxtail	I	
Setaria glauca	pigeon grass	I	
Solidago canadensis	common goldenrod	N	
Solidago gigantea	late goldenrod	N	
Taxodium distichum	bald cypress	N	planted, 6-8 ft tall
Ulmus americana	American elm	N	
Xanthium strumarium	cocklebur	N	
2.1 acre field:			
Acer saccharinum	silver maple	N	seedlings
Ambrosia artemisiifolia	common ragweed	N	
Amorpha fruticosa	false indigo bush	N	east side of levee
Aster pilosus	hairy aster	N	
Boltonia asteroides	false aster	N	
Bromus inermis	Hungarian brome	I	on levee
Carex annectans	yellow fox sedge	N	
Cephalanthus occidentalis	buttonbush	N	
Echinochloa sp.	barnyard grass	.	
Eupatorium serotinum	late boneset	N	
Fraxinus pennsylvanica	green ash	N	few, scattered
Gleditsia triacanthos	honey locust	N	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	few, scattered
Quercus macrocarpa	burr oak	N	planted, 3-6 ft tall
Quercus palustris	pin oak	N	planted, 3-6 ft tall
Rubus pensylvanicus	Yankee blackberry	N	on levee
Setaria faberi	giant foxtail	I	
Solidago canadensis	common goldenrod	N	
38 acre field:			
Alisma plantago-aquatica	water plantain	N	
Ammannia coccinea	long-leaved ammannia	N	
Amorpha fruticosa	false indigo bush	N	
Asclepias incarnata	swamp milkweed	N	
Aster simplex	panicled aster	N	
Boltonia asteroides	false aster	N	
Cephalanthus occidentalis	buttonbush	N	
Cyperus esculentus	field nut sedge	N	
Echinochloa sp.	barnyard grass	.	
Eleocharis sp.	spike rush	N	
Eupatorium serotinum	late boneset	N	
Fraxinus pennsylvanica	green ash	N	
Iris shrevei	southern blue flag	N	
Iva annua	marsh elder	N	

Leersia lenticularis	catchfly grass	N	
Lemna minor	small duckweed	N	
Penthorum sedoides	ditch stonecrop	N	
Phalaris arundinacea	reed canary grass	I	invasive
Platanus occidentalis	sycamore	N	
Polygonum coccineum	water smart weed	N	
Polygonum pensylvanicum	pinkweed	N	
Polygonum ramosissimum	bushy knotweed	N	
Quercus macrocarpa	burr oak	N	planted, 5-6 ft tall
Quercus palustris	pin oak	N	planted, 5-6 ft tall
Sagittaria latifolia	common arrowhead	N	
Salix exigua	sandbar willow	N	
Salix nigra	black willow	N	
Scirpus fluviatilis	river bulrush	N	
Setaria faberi	giant foxtail	I	
Solidago canadensis	common goldenrod	N	
Sparganium eurycarpum	common bur reed	N	
Taxodium distichum	bald cypress	N	planted, 5-6 ft tall
14.4 acre field:			
Acer saccharinum	silver maple	N	dominant, 8-12 ft tall
Aster simplex	panicled aster	N	
Boltonia asteroides	false aster	N	
Echinochloa sp.	barnyard grass	.	
Elymus virginicus	Virginia wild rye	N	
Eupatorium serotinum	late boneset	N	
Phalaris arundinacea	reed canary grass	I	invasive
Platanus occidentalis	buttonwood	N	dominant, 8-12 ft tall
Polygonum punctatum	smartweed	N	
Quercus macrocarpa	burr oak	N	planted, 4-6 ft tall
33 acre field:			
Acer saccharinum	silver maple	N	seedlings
Alisma plantago-aquatica	water plantain	N	
Amaranthus sp.	pigweed	.	
Apocynum cannabinum	dogbane	N	
Carex annectans	yellow fox sedge	N	
Carex lupulina	common hop sedge	N	
Echinochloa sp.	barnyard grass	.	
Eleocharis obtusa	blunt spike rush	N	
Eupatorium serotinum	late boneset	N	
Leersia lenticularis	catchfly grass	N	
Phalaris arundinacea	reed canary grass	I	invasive
Platanus occidentalis	buttonwood	N	8-12 ft tall
Polygonum pensylvanicum	pinkweed	N	
Quercus bicolor	swamp white oak	N	healthy, 5-7 ft tall
Quercus macrocarpa	burr oak	N	healthy, 5-7 ft tall
Quercus palustris	pin oak	N	healthy, 5-7 ft tall
Rumex altissimus	pale dock	N	
Setaria faberi	giant foxtail	I	
Solidago canadensis	common goldenrod	N	
Vernonia gigantea	tall iron weed	N	
Vitis riparia	riverbank grape	N	

Site Number: 7
Landowner: James Capel
County: Piatt County
State ID: 20071233
Practices: CP9 (Shallow Water Areas for Wildlife, 10 acres), CP12 (Wildlife Food Plot, 1.4 acres), CP22 (Riparian Forest Buffer, 25.2 acres), CP33 (Habitat Buffers for Upland Birds, 8.5 acres), ADD (Additional Acres, 14.09)
Year implemented or enrolled: 2007

Date of Site Visit: 2 July 2009
Investigators: James Ellis, Jessica Forrest, Valerie Njapa, Justin Ramey, Martin St Aubin, Terre Zeigler, Wade Louis
Duration of visit: Approximately 2 hours
Visit notes: The landowner lives on the property, and he met us on the day of the site assessment to give us a personal tour and answer questions about practice installation and management. He also works for the IDNR. A cursory inspection of the 25-acre field was made because of time limitations and fact that the vegetation composition and structure looked very even.

General Vegetation Structure: Site dominated by adventive, herbaceous vegetation from one to four feet tall. Tree species were evident but not tall enough to affect overall structure.

Dominant plant species noted: Barnyard grass in the south half and giant ragweed in the north half.

General notes: The site is a sixty-acre bottomland field in the floodplain of the Sangamon River. The site was last cropped six years ago, but only recently (2007) enrolled in the CREP program. The site floods regularly. Management this year will include mowing to knock down annual weeds. Past management has included prescribed burns.

The south half of the site was planted with a prairie mix, but with heavy spring floods, much of the 10 acre CP9 field was too wet for the species planted. A diverse mix of common grasses and forbs now populate the site. A warm season grass mix was planted in part of the 8.5 acre CP 33 field, and grasses like big bluestem, Canada wild rye, and little bluestem seem to be thriving. According to the landowner, the northeast corner of this field doesn’t experience as much flooding.

The 25 acre field that makes up the north half of the property was planted to a mix of hardwood tree species five years, some of which were evident, but not necessarily thriving. This field was sprayed with herbicide in the spring to knock back weedy grasses, and on the day of assessment, the field was dominated by head-high giant ragweed. The landowner planned to mow in between the tree rows to knock back the ragweed.

There is a thin strip of riparian forest about 25 yards wide along the Sangamon River dominated by silver maple.

Other notes: Bird species noted include dickcissel, indigo bunting, eastern meadowlark, warbling vireo, and common yellowthroat.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer saccharinum	silver maple	N	seedlings
Ambrosia artemisiifolia	common ragweed	N	
Ambrosia trifida	giant ragweed	N	
Asclepias syriaca	common milkweed	N	
Aster pilosus	hairy aster	N	
Aster simplex	panicled aster	N	
Bidens frondosa	common beggar's ticks	N	
Bidens tripartita	swamp tickseed	N	
Carex annectans	yellow fox sedge	N	
Carex molesta	field oval sedge	N	
Chenopodium album	lamb's quarters	I	
Cirsium arvense	field thistle	I	invasive
Cynanchum laeve	blue vine	N	
Cyperus strigosus	long-scaled nut sedge	N	
Desmanthus illinoensis	Illinois bundle flower	N	
Echinochloa crusgalli	barnyard grass	I	
Elymus canadensis	Canada wild rye	N	
Elymus virginicus	Virginia wild rye	N	
Erigeron annuus	annual fleabane	N	
Erigeron philadelphicus	marsh fleabane	N	
Eupatorium altissimum	tall boneset	N	
Fraxinus pennsylvanica	green ash	N	seedlings
Hibiscus trionum	flower-of-an-hour	I	
Juncus dudleyi	Dudley's rush	N	
Juncus tenuis	path rush	N	
Muhlenbergia sp.	satin grass	N	
Phalaris arundinacea	reed canary grass	I	few patches on edge
Physalis subglabrata	smooth ground cherry	N	
Polygonum aviculare	common knotweed	I	
Polygonum persicaria	lady's thumb	I	
Ratibida columnifera	long-headed coneflower	I	contaminant in seed mix
Rumex crispus	curly dock	I	
Rumex verticillatus	swamp dock	N	
Scirpus atrovirens	dark green rush	N	
Sida spinosa	prickly sida	I	
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	
Trifolium pratense	red clover	I	
Veronica peregrina	purslane speedwell	N	
Xanthium strumarium	cocklebur	N	
Northeast corner of CP33:			
Andropogon gerardii	big bluestem	N	dominant

Bromus commutatus	hairy brome	I	
Elymus canadensis	Canada wild rye	N	
Festuca arundinacea	tall fescue	I	on edges
Morus alba	white mulberry	I	small
Rudbeckia hirta	black-eyed Susan	N	
Schizachyrium scoparium	little bluestem	N	
Solidago canadensis	common goldenrod	N	
25.22 acre field:			
Agrostis alba	red top	N	
Ambrosia artemisiifolia	common ragweed	N	
Ambrosia trifida	giant ragweed	N	dominant
Carex grayi	common bur sedge	N	
Gleditsia triacanthos	honey locust	N	adventive
Gymnocladus dioicus	Kentucky coffee tree	N	planted
Hordeum jubatum	squirrel-tail grass	I	
Juglans nigra	black walnut	N	planted
Quercus palustris	pin oak	N	planted
Quercus sp.	oak	N	planted

Site Number: 8a and 8b
Landowner: Logsdon Sand and Gravel c/o Troy Logsdon
County: Cass County
State ID: 19990006 and 19990005
Practices: CP23 (Wetland Restoration, 299.8 acres) and ADD (Additional Acres, 320.46 acres)
Year implemented or enrolled: 1998

Date of Site Visit: 30 June 2009
Investigators: James Ellis, Jessica Forrest, Martin St Aubin
Duration of visit: Approximately 1.5 hours
Visit notes: We met with the landowner and his son upon our arrival to learn about the site management history and conservation practices implemented here. Only Site 8b was assessed; Site 8a was said to be flooded, almost completely under water, and inaccessible. The area designated tree planting was not flooded but soils were still saturated and muddy. Areas to the south were still under water and not assessed.

General Vegetation Structure: The north half of the site was dominated by thick patches of native, adventive tree species about 8 to 12 feet tall. Open areas with no trees had thick stands of herbaceous vegetation about waist high.

Dominant plant species noted: Water smartweed, panicled aster, eastern cottonwood, and silver maple.

General notes: Due to the close proximity of this site to the Illinois River, spring floods are usually intense leaving the area inundated for long periods of time. During the first year of enrollment of in CREP, about 2000 hardwood tree species (pecans, white oak, swamp white oak, etc.) worth about $18,000 were purchased and planted. Flooding over the next few years eliminated these trees. Mr. Logsdon noted that the whole of his property (more than the CRP field) was under water in 2006.

With the complete elimination of planted trees, the site was allowed to undergo natural regeneration. Large patches of eastern cottonwood and silver maple with box elder and white mulberry are the species establishing on site. The trees are patchy, and thick mats of vegetation mostly consisting of water smartweed and panicled aster dominate other areas without trees.

Areas to the south of the tree planting look to have been mowed or disced in the past for food plots or other types of management. Vegetation was sparse and short with much of the area in exposed mud flats.

Other notes: The Logsdon family manages water levels on this property with pumps and water control structures. They try to flood about 150 acres in the fall to provide a rest area habitat for waterfowl. They also try to keep the deer fed since everyone else upstream of them plows in the fall. Fall plowing covers up waste grain that the deer might eat. There were many deer tracks noted in the mud throughout the site.

The Logsdon family has owned this property for over 100 years. The land was cleared for agriculture in 1906, and Mr. Logsdon noted that his grandfather logged out some very big pecans and bur oak.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer negundo	boxelder	N	stump sprouts
Acer saccharinum	silver maple	N	dominant, 10-12 ft tall
Amaranthus sp.	pigweed	.	
Apocynum cannabinum	dogbane	N	
Aster simplex	panicled aster	N	
Bidens frondosa	common beggar's ticks	N	
Boltonia sp.	false aster	N	
Campsis radicans	trumpet creeper	N	
Carex sp.	sedge	N	
Cephalanthus occidentalis	buttonbush	N	
Convolvulus arvensis	field bindweed	I	
Cynanchum laeve	blue vine	N	
Eleocharis elliptica var. compressa	flat-stemmed spike rush	N	
Fraxinus pennsylvanica	red ash	N	seedlings
Ipomoea sp.	morning glory	.	
Leersia oryzoides	rice cut grass	N	
Morus alba	white mulberry	I	
Penthorum sedoides	ditch stonecrop	N	
Phyla lanceolata	fog fruit	N	
Platanus occidentalis	sycamore	N	
Polygonum coccineum	water smartweed	N	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	dominant, 8-15 ft tall
Rorippa palustris	marsh yellow cress	N	
Rumex altissimus	pale dock	N	
Salix sp.	willow	.	
Ulmus americana	American elm	N	seed
Vitis riparia	riverbank grape	N	
Xanthium strumarium	cocklebur	N	

Site Number: 8c
Landowner: Victor A Petefish Trust c/o David Petefish
County: Cass County
State ID: 20041161
Practices: CP4D (Permanent Wildlife Habitat, 8.7 acres) and CP21 (Filter Strips, 3 acres)
Year implemented or enrolled: 2002

Date of Site Visit: 30 June 2009
Investigators: James Ellis, Jessica Forrest, Martin St. Aubin
Duration of visit: Approximately 1 hour
Visit notes: This was a fairly small site compared to other properties assessed, so not as much time was needed for evaluation. Site accessed by walking in from the north.

General Vegetation Structure: Cool-season grasses two to three feet tall dominate much of the site. Other common forbs are present as well as a few scattered trees and shrubs.

Dominant plant species noted: Hungarian brome, Kentucky bluegrass, red top, and common goldenrod.

General notes: The site basically looks like a typical Illinois old field—mostly grass with patches of common forbs and a few woody trees and shrubs. It's on gently rolling topography near a small creek on the east side of the property. A ravine dissects the site almost through the middle.

Other notes: A bobwhite quail was heard calling during the visit. Other birds noted include eastern meadowlark, dickcissel, and red winged blackbird. A small patch of hemp was noted growing along the fence line on the west side of the site.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Achillea millefolium	common milfoil	I	
Agrostis alba	red top	N	dominant
Ambrosia artemisiifolia	common ragweed	N	
Apocynum cannabinum	dogbane	N	
Asclepias syriaca	common milkweed	N	
Bromus commutatus	hairy brome	I	
Bromus inermis	Hungarian brome	I	dominant
Cannabis sativa	hemp	I	one patch
Carduus nutans	musk bristle thistle	I	
Carex frankii	bristly cattail sedge	N	
Carex sparganioides	loose-headed bracted sedge	N	
Cirsium discolor	pasture thistle	N	
Dactylis glomerata	orchard grass	I	
Desmanthus illinoensis	Illinois bundle flower	N	
Elaeagnus umbellata	autumn olive	I	one big bush, invasive
Erigeron annuus	annual fleabane	N	

Eupatorium altissimum	tall boneset	N	
Festuca arundinacea	tall fescue	I	
Gleditsia triacanthos	honey locust	N	
Helianthus maximilianii	Maximilian's sunflower	I	one patch
Melilotus alba	white sweet clover	I	
Melilotus officinalis	yellow sweet clover	I	
Phleum pratense	timothy	I	
Physalis heterophylla	clammy ground cherry	N	
Physalis subglabrata	smooth ground cherry	N	
Phytolacca americana	pokeweed	N	
Plantago lanceolata	English plantain	I	
Poa pratensis	Kentucky blue grass	I	dominant
Potentilla recta	sulfur cinquefoil	I	
Prunus serotina	wild black cherry	N	
Rumex crispus	curly dock	I	
Schizachyrium scoparium	little bluestem	N	
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	dominant
Sorghastrum nutans	Indian grass	N	
Sporobolus asper	rough dropseed	N	
Teucrium canadense	germander	N	
Vernonia missurica	Missouri ironweed	N	

Site Number: 9a
Landowner: Richard and Karen Alexander
County: Sangamon County
State ID: 20010654
Practices: CP22 (Riparian Forest Buffers, 22.6 acres) and ADD (Additional Acres, 20.7 acres)
Year implemented or enrolled: 2001

Date of Site Visit: 23 June 2009
Investigators: James Ellis, Tim Rye, Jessica Forrest, Valerie Njapa, Debbie Bruce, Martin St. Aubin, Christina Pierce, and Lisa Pickert.
Duration of visit: Approximately 2 hours
Visit notes: This was the first site visited, and we met with IDNR CREP managers before walking the site. This site is at the edge of the town of Rochester with easy access. The landowner maintains mowed trails through the site, so the CREP practices were easily accessed and assessed from the mowed trails.

General Vegetation Structure: The southeast portion of the 10.5 acre field was drier than areas closer to the Sangamon River and hence the vegetation was mostly common herbaceous grasses and forbs with scattered hardwoods trees planted as part of the conservation practice.

Dominant plant species noted: The herbaceous vegetation was dominated by common goldenrod, white avens, annual fleabane, and hairy brome. Dominant tree species include planted oaks, eastern cottonwood, white mulberry, and silver maple.

General notes: The planted hardwood trees at this site are growing very well, and many healthy stems were noted. These trees included swamp white oak, Nuttall's oak, Shumard's oak, over-cup oak, chinkapin oak, and pin oak. In the wetter parts of the field closer to Route 29 and the Sangamon River, native adventive trees over-topped the planted trees. There was an especially thick patch of silver maple in the northwest corner of the 10.5 acre field. Other species included sycamore, eastern cottonwood, green ash, and white mulberry.

The trees and herbaceous vegetation were much thicker in the 11.1 acre field to the west. A few planted oaks were evident, but not as many were noted because of the thick vegetation. Adventive trees here, like silver maple, eastern cottonwood, green ash, and sycamore, were much more numerous and taller. This field is probably wetter due to it's proximity in a bend of the Sangamon River and the vegetation is responding accordingly.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
10.5 acre field:			
Acer negundo	boxelder	N	adventive
Acer saccharinum	silver maple	N	
Ambrosia trifida	giant ragweed	N	
Asclepias syriaca	common milkweed	N	

Betula nigra	river birch	N	planted, 4-8 ft tall
Bromus commutatus	hairy brome	I	dominant
Carex molesta	field oval sedge	N	
Carya cordiformis	bitternut hickory	N	adventive
Cornus drummondii	rough-leaved dogwood	N	adventive
Crataegus sp.	hawthorn	N	
Diospyros virginiana	persimmon	N	planted, 4-8 ft tall
Elaeagnus umbellata	autumn olive	I	few stems, invasive
Erigeron annuus	annual fleabane	N	dominant
Festuca arundinacea	tall fescue	I	
Fraxinus pennsylvanica	green ash	N	adventive, 10-12 ft tall
Geum canadense	white avens	N	dominant
Gymnocladus dioicus	Kentucky coffee tree	N	adventive
Juglans cinerea	butternut	N	planted, 4-8 ft tall
Juglans nigra	black walnut	N	adventive
Lactuca canadensis	wild lettuce	N	
Liquidambar styraciflua	sweet gum	N	planted, 4-8 ft tall
Lonicera maackii	amur honeysuckle	I	adventive
Lonicera tatarica	Tartarian honeysuckle	I	few stems, invasive
Monarda fistulosa	wild bergamot	N	
Morus alba	white mulberry	I	adventive
Pastinaca sativa	wild parsnip	I	
Platanus occidentalis	sycamore	N	adventive
Populus deltoides	eastern cottonwood	N	adventive
Prunus serotina	wild black cherry	N	adventive
Quercus lyrata	overcup oak	N	planted, 4-8 ft tall
Quercus macrocarpa	burr oak	N	planted, 4-8 ft tall
Quercus muhlenbergii	chinquapin oak	N	planted, 4-8 ft tall
Quercus palustris	pin oak	N	adventive
Rubus occidentalis	black raspberry	N	
Solidago canadensis	common goldenrod	N	dominant
Tradescantia ohiensis	common spiderwort	N	
Vitis riparia	riverbank grape	N	
11.1 acre field to the west:			
Acer negundo	boxelder	N	
Acer saccharinum	silver maple	N	
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Carex annectans	yellow fox sedge	N	
Carex grayi	common bur sedge	N	
Fraxinus americana	white ash	N	
Fraxinus pennsylvanica	green ash	N	
Lysimachia nummularia	moneywort	I	
Phalaris arundinacea	reed canary grass	I	
Platanus occidentalis	sycamore	N	
Populus deltoides	eastern cottonwood	N	
Quercus spp.	oaks	N	planted

Site Number: 9b
Landowner: William Smith c/o HPG Ag Services
County: Sangamon County
State ID: 20021011
Practices: CP3A (Hardwood Tree Planting, 45.2 acres) and ADD (Additional Acres, 38.98 acres)
Year implemented or enrolled: 2002

Date of Site Visit: 23 June 2009
Investigators: James Ellis, Tim Rye, Jessica Forrest, Valerie Njapa, Martin St. Aubin, Christina Pierce, and Lisa Pickert.
Duration of visit: Approximately 1 hour
Visit notes: This was the second site visited. There were no mowed paths, but the site was easily accessible. We generally made a walking loop through the middle of the site.

General Vegetation Structure: Site dominated by a few species of common, herbaceous plants generally about three feet tall. Very few woody plants were noted in the conservation practice.

Dominant plant species noted: Dominant species included panicled aster, Virginia wild rye, and common goldenrod. These species were fairly evenly distributed throughout the site with common goldenrod a bit more common on the higher ground on the west side and panicled aster more common closer to the river on the east side.

General notes: The conservation practice on this site was a hardwood tree planting, but very few planted trees were noted during the visit. A few chinkapin oaks, butternuts, and bur oaks were noted as well as a few dead stems of planted hardwood trees. We estimated about a dozen live trees in our cursory inspection of the site.

There is an 8.3-acre strip of CP21 (Filter Strip) between the 45.2-acre field and the Sangamon River. This strip appears to be mowed once or twice a season. A thin strip of riparian forest dominated by silver maple runs along the river.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer saccharinum	silver maple	N	seedlings, along river
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Aster puniceus	bristly aster	N	
Aster simplex	panicled aster	N	dominant
Campsis radicans	trumpet creeper	N	
Carex grayi	common bur sedge	N	
Carex molesta	field oval sedge	N	
Carex shortiana	short's sedge	N	
Cornus drummondii	rough-leaved dogwood	N	
Cynanchum laeve	blue vine	N	

Echinochloa crusgalli	barnyard grass	I	
Elaeagnus umbellata	autumn olive	I	adventive
Elymus virginicus	Virginia wild rye	N	dominant
Eupatorium altissimum	tall boneset	N	
Gleditsia triacanthos	honey locust	N	adventive
Juglans cinerea	butternut	N	planted
Morus alba	white mulberry	I	adventive
Platanus occidentalis	sycamore	N	
Polygonum pensylvanicum	pinkweed	N	
Quercus macrocarpa	burr oak	N	planted
Quercus muhlenbergii	chinquapin oak	N	planted
Ruellia strepens	smooth ruellia	N	
Rumex altissimus	pale dock	N	
Rumex crispus	curly dock	I	
Solidago canadensis	common goldenrod	N	dominant
Ulmus americana	American elm	N	adventive
Viola pratincola	common blue violet	N	
Vitis riparia	riverbank grape	N	

Site Number: 10a
Landowner: Leo Romanotto
County: Sangamon County
State ID: 20020942
Practices: CP3A (Hardwood Tree Planting, 6.4 acres) and ADD (Additional Acres, 53.84 acres)
Year implemented or enrolled: 2002

Date of Site Visit: 8 July 2009
Investigators: James Ellis and Jessica Cochran
Duration of visit: Approximately 1 hour
Visit notes: Contact was made with the Sangamon County resource conservationist, Terry Nichols, who showed us how to access the site. Access is through the adjacent gravel mine property. A mowed trail around the CREP practice field made the site accessible for assessment.

General Vegetation Structure: Conservation practice field dominated by a very homogenous thick stand of young, adventive trees about five to eight feet tall.

Dominant plant species noted: Silver maple was the dominant species noted, and it was very dense over much of the field.

General notes: This field is in the floodplain of the Sangamon River, and experiences regular spring floods with water that probably covers the whole field. This site was supposed to be a hardwood tree planting, but no planted hardwood tree species were observed. A single pin oak that might have been from the initial planting was noted on the west edge of the field. The thick stand of silver maples on site precluded any forays into the field.

Resource conservationist, Terry Nichols, said that the year after the initial tree planting, high floodwaters late in the season drowned the trees planted. They decided not to replant and to allow natural regeneration of vegetation on-site.

Other noes: A large stand (53.84 acres) of second-growth floodplain forest is included as Additional acres to this practice. A few large bur oaks (Quercus macrocarpa) along with other floodplain tree species were noted here (Acer saccharinum, Celtis occidentalis, and Morus alba). The Sangamon River is still fairly high, and there is standing water in low areas in the forest.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer saccharinum	silver maple	N	dominant, 5-8 ft tall
Aster simplex	panicled aster	N	
Elymus virginicus	Virginia wild rye	N	
Fraxinus pennsylvanica	red ash	N	8-10 ft tall
Plantago rugelii	red-stalked plantain	N	
Platanus occidentalis	sycamore	N	
Populus deltoides	eastern cottonwood	N	8-10 ft tall
Rudbeckia laciniata	wild golden glow	N	

Ulmus americana	American elm	N	
Quercus palustris	pin oak	N	single tree on W edge, 8 ft tall

Site Number: 10b
Landowner: John Homeier
County: Sangamon County
State ID: 20041100
Practices: CP3A (Hardwood Tree Planting, 25.5 acres) and ADD (Additional Acres, 22.7 acres)
Year implemented or enrolled: 2004

Date of Site Visit: 8 July 2009
Investigators: James Ellis and Jessica Cochran
Duration of visit: Approximately 1 hour
Visit notes: Contact was made with the Sangamon County resource conservationist, Terry Nichols, who showed us how to access the site. Access is through the adjacent gravel mine property. A mowed trail between the adjacent CREP practice property (Leo Romanotto) and this one made the site somewhat accessible for assessment. Cursory forays were made into some areas, but the east side was not inspected because of limited time and difficulty of walking through thick vegetation.

General Vegetation Structure: Conservation practice field dominated by a fairly homogeneous thick stand of young, adventive trees about five to eight feet tall. Areas of shorter trees and dominated by herbaceous vegetation were assumed to be low areas where water ponded longer after flooding.

Dominant plant species noted: Silver maple was the dominant species noted, and was very dense over much of the field. Dominant herbs included panicled aster and Virginia wild rye.

General notes: This field is in the floodplain of the Sangamon River, and experiences regular spring floods with water that probably covers the whole field. This site was supposed to be a hardwood tree planting, but no planted hardwood tree species were observed. The thick stand of silver maples on site precluded many forays into the practice. We were able to walk into some areas where the trees were less dense. Herbaceous vegetation dominated a few patches presumably because these low spots in the field held water longer and precluded vigorous tree growth.

Resource conservationist, Terry Nichols, said that the year after the initial tree planting, high floodwaters late in the season drowned the trees planted. They decided not to replant and to allow natural regeneration of vegetation on-site.

Other notes: The Additional acres on this site were not assessed.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer saccharinum	silver maple	N	dominant, 5-8 ft tall
Apocynum cannabinum	dogbane	N	
Aster simplex	panicled aster	N	

Bidens tripartita	swamp tickseed	N	
Campsis radicans	trumpet creeper	N	
Cyperus strigosus	long-scaled nut sedge	N	
Elymus virginicus	Virginia wild rye	N	
Fraxinus pennsylvanica	green ash	N	8-10 ft tall
Juglans nigra	black walnut	N	
Lysimachia nummularia	moneywort	I	
Phalaris arundinacea	reed canary grass	I	
Plantago rugelii	red-stalked plantain	N	
Platanus occidentalis	sycamore	N	
Polygonum aviculare	common knotweed	I	
Polygonum coccineum	water smartweed	N	
Polygonum hydropiper	water pepper	I	
Polygonum lapathifolium	curttop lady's thumb	N	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	8-10 ft tall
Rorippa palustris	marsh yellow cress	N	
Rorippa sylvestris	creeping yellow cress	I	
Rudbeckia laciniata	wild golden glow	N	
Rumex altissimus	pale dock	N	
Salix exigua	sandbar willow	N	
Salix nigra	black willow	N	
Solidago gigantea	late goldenrod	N	
Ulmus americana	American elm	N	

Site Number: 11
Landowner: Robert Rogers
County: Macoupin County
State ID: 20021034
Practices: CP9 (Shallow Water Areas for Wildlife, 8.4 acres), CP21 (Filter Strips, 11.5 acres), and ADD (Additional Acres, 38.74 acres)
Year implemented or enrolled: 2002

Date of Site Visit: 25 June 2009
Investigators: James Ellis, Tim Rye, Jessica Forrest, Valerie Njapa, Justin Ramey.
Duration of visit: Approximately 2 hours
Visit notes: Site access is from the east along a two-track path that fords Hurricane Creek. It was too muddy to cross the creek with vehicles, so we walked back into the property. We had some difficulty determining the location of CREP practice to be assessed because the adjacent property to the north also looked to be in a conservation practice.

General Vegetation Structure: Field assessed generally dominated by a diverse mix of common herbaceous vegetation three to four feet tall with a few patches of young, woody vegetation.

Dominant plant species noted: Dominant species included Hungarian brome, common goldenrod, and tall fescue. In wetter areas closer to the creek there were large patches of reed canary grass with some areas of willow.

General notes: The field assessed is along and partly in the floodplain of Hurricane Creek. The higher and drier areas on the west side had a fairly diverse mix of common herbaceous plant species, but Hungarian brome was the dominant plant species. There was a wet area with wet, saturated soils and some standing water noted. This is where the reed canary grass was noted, but many common species of wetland plants could be found in the wetter areas including many species of sedges.

The Additional acres on the upland slope above the creek and field looked to be scrubby second growth woods with honey locust, American elm, amur honeysuckle, multiflora rose, shingle oak, black oak, hickory, black cherry, and burr oak.

Other notes: The map indicated conservation practices on the east side of the creek, but this area was not assessed due to limited accessibility.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. The Origin of a species is denoted at native (N) or non-native (I).*

Scientific Name	Common Name	Origin	Notes
Acer negundo	boxelder	N	
Acer saccharinum	silver maple	N	
Allium vineale	field garlic	I	
Andropogon virginicus	broom sedge	N	

Apocynum cannabinum	dogbane	N	
Bromus inermis	Hungarian brome	I	dominant
Bromus japonicus	Japanese chess	I	
Carduus nutans	musk bristle thistle	I	invasive
Cirsium discolor	pasture thistle	N	
Convolvulus arvensis	field bindweed	I	
Conyza canadensis	horseweed	N	
Cornus drummondii	rough-leaved dogwood	N	
Daucus carota	Queen Anne's lace	I	
Elymus canadensis	Canada wild rye	N	
Erigeron annuus	annual fleabane	N	
Eupatorium altissimum	tall boneset	N	
Festuca arundinacea	tall fescue	I	dominant
Geum canadense	white avens	N	
Helianthus sp.	Sunflower	N	
Ipomoea pandurata	wild sweet potato	N	
Lonicera maackii	amur honeysuckle	I	
Medicago sativa	alfalfa	I	
Pastinaca sativa	wild parsnip	I	
Phytolacca americana	pokeweed	N	
Plantago lanceolata	English plantain	I	
Poa pratensis	Kentucky blue grass	I	
Potentilla norvegica	rough cinquefoil	N	
Rosa multiflora	Japanese rose	I	
Rubus pensylvanicus	Yankee blackberry	N	
Rumex crispus	curly dock	I	
Sisyrinchium angustifolium	stout blue-eyed grass	N	
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	dominant
Sorghum halepense	Johnson grass	I	
Toxicodendron radicans	poison ivy	N	
Trifolium pratense	red clover	I	
Trifolium repens	white clover	I	
Verbascum thapsus	woolly mullein	I	
Verbena urticifolia	white vervain	N	
Wetter area:			
Agrostis alba	red top	N	
Campsis radicans	trumpet creeper	N	
Carex annectans	yellow fox sedge	N	
Carex cf. gracillima	sedge	N	
Carex conjuncta	green-headed fox sedge	N	
Carex davisii	awned graceful sedge	N	
Carex molesta	field oval sedge	N	
Carex radiata	straight-styled wood sedge	N	
Carex sparganioides	loose-headed bracted sedge	N	
Cryptotaenia canadensis	honewort	N	
Glyceria striata	fowl manna grass	N	
Juncus dudleyi	Dudley's rush	N	
Juncus torreyi	Torrey's rush	N	
Lobelia siphilitica	great blue lobelia	N	
Lycopus virginicus	bugle weed	N	
Lysimachia nummularia	moneywort	I	
Lythrum alatum	winged loosestrife	N	
Phalaris arundinacea	reed canary grass	I	few thick patches

Populus deltoides	eastern cottonwood	N	in patches
Rudbeckia laciniata	wild golden glow	N	
Rumex verticillatus	swamp dock	N	
Salix nigra	black willow	N	
Scirpus atrovirens	dark green rush	N	
Scirpus pendulus	red bulrush	N	
Solidago gigantea	late goldenrod	N	

University of Illinois
Institute of Natural Resource Sustainability
William Shilts, Executive Director

ILLINOIS NATURAL HISTORY SURVEY
Brian D. Anderson, Director
1816 South Oak Street
Champaign, IL 61820
217-333-6830

Additional Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois

James Ellis and Jessica Forrest

Illinois Natural History Survey and
Illinois Department of Natural Resources

Prepared for:
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

INHS Technical Report 2010 (47)
Date of issue: 29 November 2010

ILLINOIS
NATURAL
HISTORY
SURVEY

Acknowledgements

The authors would like to acknowledge guidance for this project from Illinois Department of Natural Resources Conservation Reserve Enhancement Program coordinators Debbie Bruce and Valerie Njapa. Additional assistance for site access and site histories came from Andy Karrick (Fulton County SWCD) and other county Soil and Water Conservation District personnel.

Field assistance was provided by Tim Rye (INHS/CTAP Botanist) and Rachel Pirkle (INHS/CTAP botanical assistant). Dr. Michael P. Ward was the coordinator of the Critical Trends Assessment Program at the Illinois Natural History Survey for the duration of this project. Dr. T. J. Benson is the current coordinator.

Summary

Biological assessment of properties enrolled in the Conservation Reserve Enhancement Program (CREP) in Illinois has generally been lacking. To remedy this situation, scientists from the Illinois Department of Natural Resources and the Illinois Natural History Survey teamed up in 2009 to conduct a pilot study to make general botanical assessments of 11 randomly selected sites comprising 17 private properties in central Illinois enrolled in CREP. Botanical assessments were repeated in 2010 with an additional eight randomly selected CREP properties. Each property was visited once, and a list of plant species was made and general vegetation structure was noted. Sites ranged from being dominated by native herbaceous species like common goldenrod to being dominated by tree species like silver maple and eastern cottonwood. Native plant species were generally more abundant than non-native species, but invasive species like reed canary grass, field thistle, and Amur honeysuckle were present on some sites. Compared to randomly selected wetland and grassland sites sampled as part of the Critical Trends Assessment Program (CTAP), the CREP sites were more botanically rich and diverse, but as sites mature without management or disturbance, plant diversity is expected to decline.

Introduction to Illinois CREP

The Conservation Reserve Enhancement Program (CREP) is a federal and state conservation incentive program that was created by a Memorandum of Agreement (MOA) between the U.S. Department of Agriculture, the Commodity Credit Corporation, and the State of Illinois in March 1998. Enrollments into this program began on May 1, 1998 (State of Illinois 2009). It is administered through the US Department of Agriculture's Farm Service Agency, Natural Resources Conservation Service, local Soil and Water Conservation Districts, and the Illinois Department of Natural Resources.

One of the goals of CREP is to establish on-the-ground conservation practices to reduce sedimentation and nutrient input into Illinois' streams and rivers. The other goal is to enhance habitat to increase fish and wildlife populations. The entire Illinois River Basin is targeted with an emphasis on the 100-year floodplain (Figure 1). Parcels of land managed for conservation rather than agriculture along the main stem of the Illinois River and its tributaries are expected to help protect water quality in the river. Conservation practices also protect environmentally sensitive land and safeguard ground and surface water.

Landowners voluntarily enroll parcels of eligible agricultural land (i.e. land with a cropping history) and receive incentive payments for installing specific conservation practices. Parcels of land are first enrolled in a Federal 15-year Conservation Reserve Program (CRP) contract, and landowners receive annual rental payments and cost-share incentives. Once enrolled in the Federal program, landowners have the option to extend their contract by entering into a State conservation easement for an additional 15 years, 35 years, or permanently (PERM), and the State of Illinois provides incentives for the different options. Participants retain ownership of their land, and CREP does not place restrictions on recreational activities, including hunting and fishing. When a parcel is enrolled, land use changes (i.e. cropping practices stop), and conservation practices are implemented which include planting the site with a permanent vegetative cover such as perennial grasses, forbs, or trees.

By coupling conservation initiatives with landowner incentives, CREP has been able to achieve large-scale restoration of natural areas on private lands to stabilize soil, improve water quality, and support wildlife (Allen 2005). From inception of the program in 1998 through September 2009, total Federal enrollment in Illinois is at126,601 acres (State of Illinois 2009). The Illinois CREP program is one of the most successful in the nation, and the state has enrolled more than 126,000 acres. Thus, the United States Department of Agriculture has approved an expansion of the CREP program into the Kaskaskia River Watershed as well as an additional 100,000 acres to be enrolled through December 31, 2012. Over 90% of state CREP acres are in permanent easements, ensuring long-term protection of floodplains and other environmentally sensitive land.

Botanical Assessment of Illinois CREP Sites

Since the implementation of CREP in Illinois, little biological assessment or monitoring has been conducted on CREP practices to evaluate if the program is achieving what it set out to accomplish. With tracts scattered throughout the Illinois River Basin, it is difficult for the administrating agencies to effectively monitor the habitats being created through CREP practices. Local Soil and Water Conservation Districts (SWCD) conduct easement compliance monitoring, but they might lack the skill or resources to conduct biological assessments.

Researchers from the Illinois State Water Survey have monitored sediments and nutrients in select watersheds to evaluate this aspect of the program since 1999 (Demissie et. al 2001, State of Illinois 2009). Even with only nine years of data, they have found that sediment loads have generally leveled off but no trends in nutrient loads have been detected. A longer period of data collection is needed to assess the long-term effectiveness of CREP practices. Phillips and Brown (2004) examined the vegetation composition and structure of wetlands created through CREP and found, not surprisingly, that CREP wetland sites were dominated by common, weedy plant species. Using GAP analysis techniques, they did find that CREP acres should increase available habitat for a large number of species. O'Neal et al. (2008; see also O'Neal and Heske 2007) examined wetlands created as a result of CREP practices and found them to be important habitat for waterbirds as long as hydrology was managed (i.e. presence of open water) and there was the right amount of vegetative cover (i.e. about 30% of the wetland was vegetated). Other researchers have examined the impact of the Conservation Reserve Program (CRP) on grassland bird populations in Illinois (e.g. Herkert 2007, 2009) and have found a positive effect. These past studies are important and informative, but continued systematic assessment of CREP practices and its impacts on plants or wildlife is needed.

To remedy the lack of biological information, CREP management personnel from the Illinois Department of Natural Resources (IDNR) approached biologists working for the Critical Trends Assessment Program (CTAP) at the Illinois Natural History Survey (INHS) in early 2009 to initiate a pilot study to assess CREP practices in Illinois. CTAP biologists have collected bird, plant, and insect data from randomly selected forest, wetland, and grassland habitats across the state of Illinois since 1997 (IDNR 2001). Invertebrate data from randomly selected stream segments were also collected from 1997 to 2007. CTAP botanists would provide a basic knowledge of Illinois flora and would bring extensive field experience to the pilot study. CTAP also houses a large data set with which to make some generalized comparisons of CREP sites assessed. Specifically, CTAP botanists were asked to work with IDNR staff to provide on-the-ground botanical assessments of a subset of CREP sites during the 2009 field season (Ellis et al. 2010). To build on the information collected in 2009, another set of CREP sites were selected and assessed in 2010.

Methods

CREP sites for this study were selected based on proximity to sites CTAP biologists planned to sample in 2010. Coordinates (latitude/longitude) for the CTAP 2010 sites and shape files (.shp) for all Illinois CREP easements were obtained. ArcGIS software was used to query all CREP easements within a 1 km radius of CTAP 2010 sites. This query provided a random sample of CREP sites to assess. In the case where additional sites were preferred or regional gaps were present sites were selected at random using the ArcGIS software. All of the CREP sites were on private property, so IDNR staff worked with local SWCD staff to contact prospective landowners and gain permission to access property to conduct the botanical surveys.

Each site was visited once during June or September 2010. Visual assessments were made by walking through or around each site where feasible (Figure 2). Thick vegetation or high water levels made some sites or parts of sites inaccessible. A plant species list was made of all identifiable vegetation encountered during the visit, and notable features such as dominant plant species, woody trees or shrubs, and an estimate of general vegetation height were recorded. No attempt was made to catalog every species that might have occurred on a site. Other notes might include water level or conditions, evidence of past disturbance such as flooding or mowing, or evidence of current management practices such as herbicide application or mowing. These notes were compiled to create basic plant species lists for each site as a whole as well as distinct fields or conservation practices within a site. Other notes about wildlife observations, site conditions on the day of the visit, or about site access were also compiled. Representative photographs were also taken at each site. Length of visit was noted and depended on the size of a site (acreage), accessibility, and general diversity of vegetation present. Larger and more botanically diverse sites typically took longer to assess.

Results and Discussion

Nine sites were initially selected for assessment, but only eight sites were visited and assessed. Due to difficult access and time limitations, one site selected in Bureau County was not assessed. (Figure 1, Table 1, Appendix 1, 2, and 3).

A total of 17 CREP practices were assessed within the eight sites. The number of practices at each site ranged from one to three with an average of two (Table 1, Appendix 1). Five different CREP practices were observed: Riparian Forest Buffers, Permanent Wildlife Habitat, Wetland Restoration, Wildlife Food Plot, and Additional Acres. The most common practice was Additional Acres at seven sites. Additional Acres are lands that do not have a cropping history but are eligible for easement payment because they are adjacent to a CREP practice on the property and are in a 100-year floodplain. Typically Additional Acres do not receive any supplemental management. The Additional Acres for these seven sites were floodplain forests. Practices assessed had been implemented anywhere from two to 11 years prior to assessment with an average of 7.5 years. Sites ranged in size from 20 to 390 acres with a median size of 46 acres. Combined, all eight sites totaled 726 acres. Additional acres were not assessed for this study, so the amount of land assessed ranged from 7.5 to 279.5 acres with a median of 28 acres. Length of assessment time spent at each site averaged about two hours (Table 2). Two representative photographs taken at each site are included in Appendix 2.

As expected for properties eligible for enrollment in CREP, most sites could be classified as floodplains or bottomlands that are seasonally wet (i.e. flooded) through the late winter and spring. Most sites were dry or not inundated with water during visits. One site (Site 7, Schuyler County) was not accessible in late July because flooding. This site was accessible on a return visit in September.

Plant Composition and Structure

The CREP practices on the eight sites assessed (not including Additional Acres) could be characterized as early successional, fallow agricultural fields dominated by weedy annual and perennial plant species. General observations made at each site and plant species lists can be found in Appendix 3. A range of 40 to 74 plant species was observed at each site with a median of 52.5 species (Table 3). Thirty-two to 58 native plant species with a median of 40 species were observed, and six to 21 non-native plant species with a median of 11.5 species were observed. Interestingly, regardless of the size of the property, plant species richness was relatively similar across all sites (Table 3). All sites were well vegetated at the time of assessment. One site (Site #7 Schuyler County) had areas of bare soil and dead vegetation most likely due to extended inundation by floodwaters. This site also had an area of freshly tilled soil. Planted trees, mainly oak species, were observed at five (Sites 2, 3, 4, 5, and 6) out of the eight sites.

Most of the sites observed were dominated by perennial and annual forbs. Herbaceous vegetation typically ranged from two to four feet tall depending on the dominant species present. Trees included species planted as part of a conservation practice (typically oaks and other hardwoods) or volunteer tree species. Since all practices visited were less than ten years old, most trees were not very tall and ranged from seedlings to planted individuals that were two to three feet tall to fast growing volunteer species that were fifteen to twenty feet tall. Sites with frequent flooding disturbance usually had the thickest stands of volunteer trees species. Tree densities were estimated from thick, to scattered, to patchy depending on site conditions. Observed success of planted trees was variable. On a few sites planted with trees, hardwood species were obvious (e.g. Site #4 Fulton County) and at other sites planted trees were scattered and difficult to detect (e.g. Site #6 Logan County). This between site variability probably depended on the size of tree stock planted (i.e. small bare root seedlings versus larger saplings) as well as local site conditions (e.g. hydrology). Planted trees did poorly on sites with frequent flooding or prolonged inundation as well as on sites where herbaceous vegetation or volunteer trees over-topped planted trees. Oak species need plenty of sunlight to thrive and grow poorly in shaded conditions.

Eastern cottonwood (*Populus deltoides*) and silver maple (*Acer saccharinum*) were the most commonly encountered volunteer tree species. Seeds of these species are easily carried by floodwaters and readily colonize recently disturbed floodplains (i.e. sites with a history of agriculture, flooding). Bur oak (*Quercus macrocarpa*) was the most commonly encountered planted tree species. Common goldenrod (*Solidago canadensis*) was the most commonly encountered forb species. Annual grasses like foxtail (*Setaria faberi* and *S. glauca*) were very common. Other common annual forbs included ragweed (*Ambrosia trifida* and *A. artemisiifolia*), dogbane (*Apocynum cannabinum*), common milkweed (*Asclepias syriaca*), hairy aster (*Aster pilosus*), annual fleabane (*Erigeron annuus*), tall boneset (*Eupatorium altissimum*), pinkweed (*Polygonum pennsylvanicum*), and cocklebur (*Xanthium strumarium*). Other common grasses included Hungarian brome (*Bromus inermis*), barnyard grass (*Echinocloa crusgalli*), switch grass (*Panicum virgatum*), and reed canary grass (*Phalaris arundinacea*). One site (Site #8 Menard County) was dominated by planted grasses—switch grass and Indian grass (*Sorghastrum nutans*).

Non-native plant species were present on every site, but generally, native plant species represented most of the plant richness observed (Table 3). Some non-native species like Hungarian brome, tall fescue (*Festuca arundinacea*), and reed canary grass are widely planted for agricultural purposes, and they might have been planted at these sites or invaded from nearby fencerows or road ditches.

Invasive plant species were noted on many sites but were not necessarily ubiquitous across sites. Worrisome herbaceous species that were observed included field thistle (*Cirsium arvense*), white and yellow sweet clover (*Melilotus* sp), wild parsnip (*Pastinaca sativa*), cut-leaved teasel (*Dipsacus laciniatus*), and reed canary grass. A patch of cut-leaved teasel was observed at one site (Site #5 Tazewell County). Some non-native species like barnyard grass and giant foxtail are ubiquitous but not cause for worry. Woody invasive species like autumn olive (*Eleagnus umbellata*), amur honeysuckle (*Lonicera maackii*), and white mulberry (*Morus alba*) were generally few and scattered where observed. Amur honeysuckle was particularly thick at the edge of one site (Site #2 Livingston County).

Generally speaking an invasive is a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health (see Colautti and MacIsaac 2004). Reed canary grass is an especially worrisome species that has been widely planted (Galatowitsch et al. 1999) and readily invades disturbed, wet soil (Kercher and Zedler 2004). Monotypic stands of this species have been shown to greatly decrease local biodiversity (Spyreas et al. 2009). We have observed that woody invaders like amur honeysuckle and autumn olive can fundamentally change the habitat structure of forests and grasslands in Illinois. These changes in structure could be detrimental to wildlife if, for example, shading from invasive shrubs impedes regeneration of oaks or invading shrubs eliminate grassland habitat needed by grassland bird species.

Site Evaluation and Comparison with CTAP Data

It's difficult to make precise evaluations of conservation success or habitat quality based on observations during brief site visits because of multiple factors: short time since practice implementation (less than 10 years for all sites), differences in vegetation planted, differences in management practices, differences in hydrology, and differences in adjacent land-use (i.e. vegetation cover). Adjacent land use either impedes (e.g. row-crops) or contributes to plant species observed at any one site. General estimates of plant richness and diversity can be gleaned from the species lists made during each site visit and should only be used to give a general impression of vegetative cover at this point in time.

A comparison and general evaluation of CREP sites assessed for this study can be made with wetland and grassland sites sampled as part of the Critical Trends Assessment Program. CTAP sites are randomly selected from across the state of Illinois and therefore are expected to yield a picture of average wetland and grassland habitat in Illinois. Vegetation data are collected using a quantitative, plot based system (Molano-Flores 2003).

CTAP has found that in general, native plant species richness and cover are greater than non-native plant species in wetlands (Molano-Flores et al. 2007, Table 4). Even with this general finding, CTAP has also observed that almost a third of all randomly selected wetlands are dominated by reed canary grass (Spyreas et al. 2004). As mentioned above, this pernicious weed colonizes wet soils and forms monotypic stands usually to the detriment of other species. On average about 12 native and two non-native plant species were encountered in CTAP wetlands

(Table 4) or 83% of plant species are native and 17% are non-native.

Grasslands sampled by CTAP have an affinity to CREP sites because of similar hydrologic conditions, past disturbance events (e.g. row-crop agriculture), and current vegetation patterns as do CTAP wetland sites. With the almost complete destruction of the native grassland ecosystem (prairie) in Illinois, grassland habitat is now comprised of land in agricultural uses—pasture, hay, small grains, orchards, fallow fields, and now increasingly set aside land in programs like CRP and CREP. The overwhelming majority of grasslands sampled by CTAP are dominated by non-native, cool-season grasses like Hungarian brome, tall fescue, and Kentucky bluegrass (*Poa pratensis*). In general more native plant species are encountered than non-native species in CTAP grassland sites, but non-native species dominate because they comprise a greater proportion of the vegetation cover (Table 4). On average about ten native and seven non-native plant species were encountered in CTAP grasslands or 58% of plant species were native and 42% were non-native.

A greater richness of native plant species was found at CREP sites than at comparable CTAP sites, and consistent with CTAP findings, most of the species encountered at CREP sites were native to the Illinois flora. On the eight CREP sites assessed, 77% of plant species encountered were native and 23% were non-native. Even though plot-based measurements were not taken, the general sense is that native plant species dominated most CREP sites.

A closer look at the species encountered at CREP sites will also reveal that even though most of the plants are native, these species are disturbance tolerant and considered weedy. Native annual weeds like common and giant ragweed, tall boneset, and annual fleabane were encountered at many sites. Common goldenrod, found at every site, is a quick growing, native perennial herb that readily colonizes disturbed soil. Other weedy native, perennials included panicled aster and hairy aster. Woody natives with a somewhat weedy habit included species mentioned earlier—silver maple, eastern cottonwood, and green ash (*Fraxinus pennsylvanica* var. *subintegerrima*). Most annual species will decrease in abundance with time.

In a study of natural and restored (i.e. newly created) wetlands in Illinois, Matthews and Spyreas (2010) found that the species composition and successional development of restored wetlands does not necessarily result in desired outcomes (i.e. a botanically diverse wetland). Even with proper site preparation and planting of desirable species, the composition of restored wetlands eventually became (over 5 to 11 years) more similar to natural wetlands that were deemed degraded or of low botanical quality. They concluded that invasion by non-native species and lack of wetland plant propagules (i.e. seeds) limited development.

Without active and long-term management (activities such as addition of native plant seeds, prescribed fire, mowing, or herbicide application) or frequent disturbances (e.g. flooding) we assume CREP sites will eventually become less botanically diverse as a few perennial weeds or trees become more dominant and annual and biennial species fade away. Some of this is to be expected from normal vegetation succession over time, while some of it as mentioned, stems from a lack of management and seed sources for late successional wetland or floodplain forest plants. The study above shows that this scenario is probable. There is also the possibility of invasive plant species becoming dominant. Without control, species like field thistle, Amur honeysuckle, autumn olive, white mulberry, and reed canary grass could grow and spread to the detriment of other species thus diminishing the habitat quality of the CREP practice.

Recommendations for Future Monitoring

Rapid site visits such as the ones made for this study may be useful to give a general indication of vegetation structure and composition. Short visits can also be useful to detect unwanted, weedy, and invasive species that might degrade (i.e. lower botanical diversity) the CREP practice or nearby habitats. The short site visits presented here shouldn't necessarily be used as baseline data to compare to data collected in the future because they are not plot based (i.e. fixed area). Some generalizations can be made from them.

We recommend that a more systematic effort be made to collect quantitative vegetation data in a scientifically rigorous way, and we recommend that personnel with botanical expertise and a thorough knowledge of the Illinois flora should be utilized for data collection. Site selection methods that take into factors such as CREP practice, landscape position, or age of practice should also be considered to make meaningful data comparisons.

Quantitative vegetation data can be collected and indicators of vegetation quality could be calculated with some caveats. Richness, diversity, and Floristic Quality Assessment (Mean C, FQI) could be used but effort needs to be standardized (i.e. fixed area, plot based approach or a multiple visit approach). Investigators also need to realize that these methods might not be very meaningful to sediment and nutrient reduction goals or wildlife habitat creation goals. However, perennial plant cover no matter the species composition should effectively reduce sediments, and vegetation structure not necessarily composition is important to wildlife species. As discovered by O'Neal et al. (2008) and others (Phillips and Brown 2004), the Mean C and FQI values between CREP sites were low and without much variation because all CREP sites were colonized by common and weedy plant species all with low Coefficient of Conservatism values.

Literature Cited

Allen, A. W. 2005. The Conservation Reserve Enhancement Program. Pages 115–134 in J. B. Haufler, editor. Fish and wildlife benefits of Farm Bill conservation programs: 2000–2005 update. The Wildlife Society Technical Review 05-2, Bethesda, Maryland, USA.

Colautti, R. I. and H. J. MacIsaac. 2004. A neutral terminology to define 'invasive' species. Diversity and Distributions 10:135-414.

Demissie, M., L. Keefer, J. Slowikowski, A. Russell, T. Snider, and K. Stevenson. 2001. Sediment and Nutrient Monitoring at Selected Watersheds within the Illinois River Watershed for Evaluating the Effectiveness of the Illinois River Conservation Reserve Enhancement Program (CREP). Contract Report 2001-12.

Ellis, J., J. Forrest, and T. Rye. 2010. A Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois. Illinois Natural History Survey Technical Report 2010-9. 8 pp + figures, tables, and appendices.

Galatowitsch, S. M., N. O. Anderson, and P. D. Ascher. 1999. Invasiveness in wetland plants in temperate North America. Wetlands 19:733-755.

Herkert, J. R. 2007. Conservation Reserve Program benefits on Henslow's Sparrows within the United States. Journal of Wildlife Management 78:2749–2751.

Herkert, J. R. 2009. Response of Bird Populations to Farmland Set-Aside Programs. Conservation Biology 23(4):1036-1040.

Illinois Department of Natural Resources. 2001. Critical trends in Illinois ecosystems. Illinois Department of Natural Resources, Office of Realty and Environmental Planning, Office of Scientific Research and Analysis, Springfield, Illinois, USA.

Kercher, S. M., and J. B. Zedler. 2004. Multiple disturbances accelerate invasion of reed canary grass (Phalaris arundinacea L.) in a mesocosm study. Oecologia 138:455-464.

Matthews, J. W. and G. Spyreas. 2010. Convergence and divergence in plant community trajectories as a framework for monitoring wetland restoration progress. Journal of Applied Ecology 47:1128-1136.

Molano-Flores, B. 2003. Critical Trends Assessment Program Monitoring Protocols. Technical Report 2002-2. Illinois Department of Natural Resources, Office of Scientific Research and Analysis, Illinois Natural History Survey, Champaign, IL. 38 pp, + figures, tables, and appendix.

Molano-Flores, B., C. C. Carroll, J. L. Ellis, G. Spyreas, R. Edward DeWalt, S. Bailey, R. Jack, and M. Ward. 2007. Critical Trends Assessment Program: Keeping an Eye on Illinois Habitats. Illinois Department of Natural Resources, Office of Scientific Research and Analysis. 28 pp.

O'Neal, B. J. and E. J. Heske. 2007. Characterization of wetlands in the Conservation Reserve Enhancemnt Program in Illinois. Transactions of the Illinois State Academy of Science 100(2):157-167.

O'Neal, B. J., E. J. Heske, and J D. Stafford. 2008. Waterbird response to wetlands restored through the Conservation Reserve Enhancement Program. Journal of Wildlife Management 72(3):654-664.

Phillips, D and P. Brown. 2004. Assessment of CREP wetland habitat quality for wildlife. Illinois Natural History Survey Technical Report, Champaign, IL.

Spyreas, G., J. Ellis, C. Carroll, and B. Molano-Flores. 2004. Non-native plant commonness and dominance in the forests, wetlands, and grasslands of Illinois, USA. Natural Areas Journal 24:290-299.

Spyreas, G., B. W. Wilm, A. E. Plocher, D. M. Ketzner, J. W. Matthews, J. L. Ellis, and E. J. Heske. 2009. Biological consequences of invasion by reed canary grass (*Phalaris arundinacea*). Biological Invasions.

State of Illinois. 2009. Illinois Conservation Reserve Enhancement Program 2009. Annual report for reporting period October 1, 2008 through September 30, 2009. Illinois Department of Natural Resources, Springfield, IL.

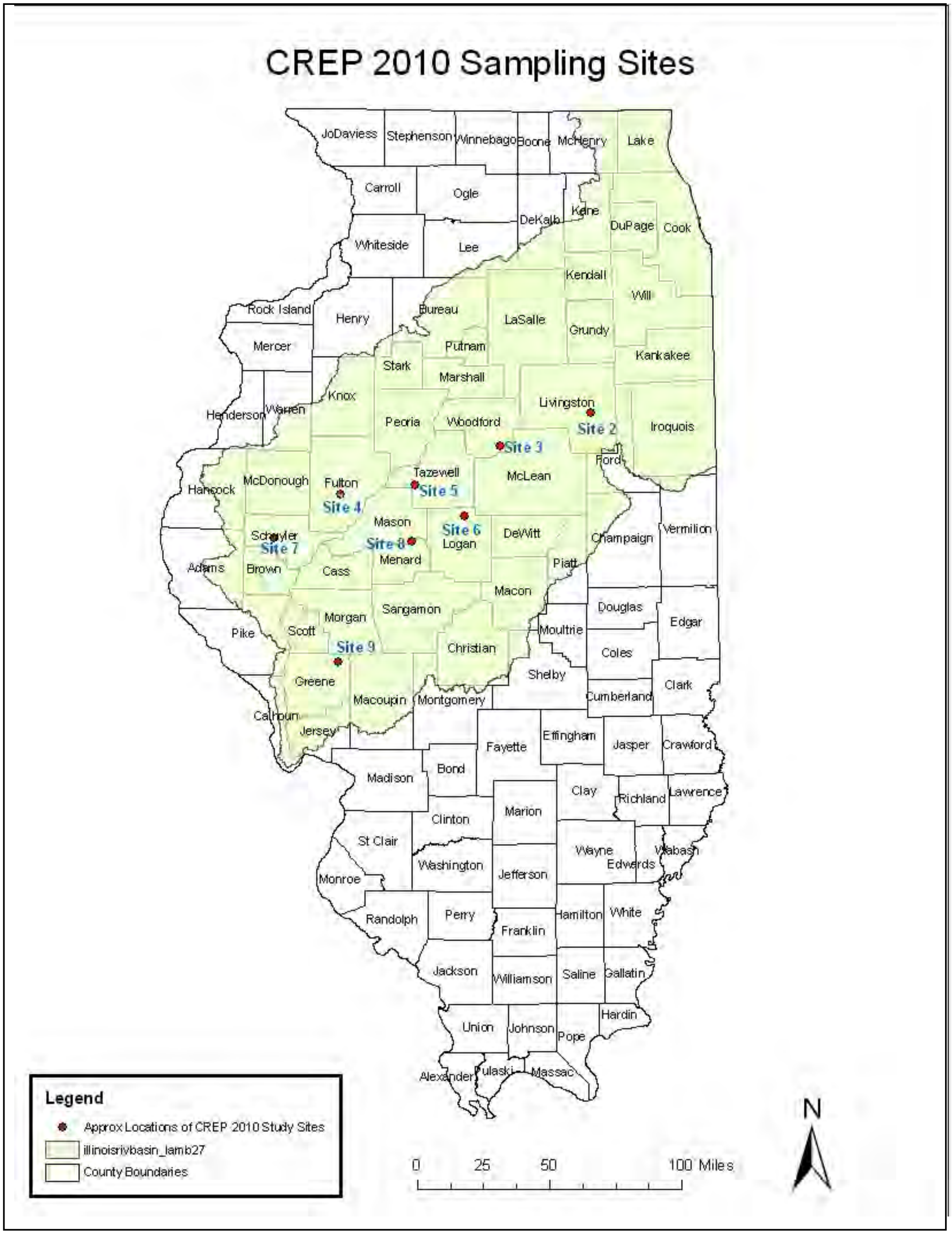


Figure 1. Conservation Reserve Enhancement Program (CREP) sites sampled during summer 2010 as part of a botanical assessment pilot study. The entire Illinois River Basin has been the target region for Illinois CREP.

Table 1. A summary of the CREP properties sampled for the summer 2010 botanical assessment pilot study. Habitat type is a terse description of the conservation practice, and expiration refers to the number of years the easement lasts since enrollment. PERM indicates a permanent (99 year) easement. Listed area is in acres.

<table>
<tr><th>Site #</th><th>Habitat Type</th><th>Practice</th><th>Subpractice</th><th>County</th><th>Year Implemented or Enrolled</th><th>Expiration</th><th>Listed Area</th><th>Total Acres</th><th>Type of Acres</th></tr>
<tr><td>2</td><td>Riparian Forest Buffers</td><td>CP22</td><td>None</td><td>Livingston</td><td>1999</td><td>15 yr</td><td>37.00</td><td>37.00</td><td>Riparian Buffer</td></tr>
<tr><td rowspan="2">3</td><td>Riparian Forest Buffers</td><td>CP22</td><td rowspan="2">None</td><td rowspan="2">Woodford</td><td rowspan="2">2001</td><td rowspan="2">PERM</td><td>30.10</td><td rowspan="2">52.20</td><td>Riparian Buffer</td></tr>
<tr><td>Additional Acres</td><td>ADD</td><td>22.10</td><td>Floodplain (20.10) and HEL (2.0)</td></tr>
<tr><td rowspan="2">4</td><td>Wetland Restoration</td><td>CP23</td><td rowspan="2">None</td><td rowspan="2">Fulton</td><td rowspan="2">2000</td><td rowspan="2">PERM</td><td>279.50</td><td rowspan="2">390.20</td><td rowspan="2">Riparian Buffer</td></tr>
<tr><td>Additional Acres</td><td>ADD</td><td>110.70</td></tr>
<tr><td rowspan="3">5</td><td>Permanent Wildlife habitat</td><td>CP4D</td><td rowspan="3">None</td><td rowspan="3">Tazewell</td><td rowspan="3">2007</td><td rowspan="3">PERM</td><td>~7.10</td><td rowspan="3">92.70</td><td rowspan="2">Riparian Buffer</td></tr>
<tr><td>Riparian Forest Buffers</td><td>CP22</td><td>~18.80</td></tr>
<tr><td>Additional Acres</td><td>ADD</td><td>66.79</td><td>Floodplain</td></tr>
<tr><td rowspan="2">6</td><td>Riparian Forest Buffers</td><td>CP22</td><td rowspan="2">None</td><td rowspan="2">Logan</td><td rowspan="2">2001</td><td rowspan="2">PERM</td><td>7.50</td><td rowspan="2">27.20</td><td>Riparian Buffer</td></tr>
<tr><td>Additional Acres</td><td>ADD</td><td>19.70</td><td>Floodplain (6.7) and HEL (17)</td></tr>
<tr><td rowspan="2">7</td><td>Wetland Restoration</td><td>CP23</td><td rowspan="2">None</td><td rowspan="2">Schuyler</td><td rowspan="2">2000</td><td rowspan="2">PERM</td><td>38.50</td><td rowspan="2">40.00</td><td>Riparian Buffer</td></tr>
<tr><td>Additional Acres</td><td>ADD</td><td>1.50</td><td>ADD</td></tr>
</table>

Site #	Habitat Type	Practice	Subpractice	County	Year Implemented or Enrolled	Expiration	Listed Area	Total Acres	Type of Acres
8	Permanent Wildlife habitat	CP4D	None	Menard	2008	PERM	19.50	66.92	Riparian Buffer
	Additional Acres	ADD					47.42		Floodplain
9	Wetland Restoration	CP23	CP12 (Wildlife Food Plot)	Greene	2004	PERM	11.30	20.00	Riparian Buffer
	Additional Acres	ADD	None				8.70		Floodplain (6.4) and HEL (2.3)
Totals							726.21 acres		

Table 2. Summary of hours spent on each site by primary investigator.

Site	County	Visit Date (2010)	Hours on Site
2	Livingston	15-Sep	2.25
3	Woodford	15-Sep	2
4	Fulton	9-Sep	1.75
5	Tazewell	29-Jun	4
6	Logan	2-Sep	1.5
7	Schuyler	1-Sep	2
8	Menard	2-Sep	1.25
9	Greene	30-Jun	2.25
		Total	**17**
		Average	**2.13**
		Median	**2**

Table 3. Summary of number of plant species observed at each CREP site assessed in 2010. Lists of those species can be found in the site summaries in Appendix 3. These data do not represent a complete or exhaustive number of plant species that might have been on each site. The assessed acreage includes all CREP practices on a site in acres; this figure does not include the Additional Acres (ADD) since this practice was not assessed during site visits.

Site	County	Acres Assessed	Native Species	Non-native Species	Total Species
2	Livingston	37	36	11	47
3	Woodford	30.1	43	15	58
4	Fulton	279.5	58	12	70
5	Tazewell	25.9	41	21	62
6	Logan	7.5	39	6	45
7	Schuyler	38.5	32	8	40
8	Menard	19.5	37	9	46
9	Greene	11.3	55	19	74
	Total	**449.3**	**158***	**45***	**203***
	Average	**56.16**	**42.63**	**12.63**	**55.25**
	Median	**28**	**40**	**11.5**	**52.5**

*These totals are not additive from the table; these data represent all species recorded across all eight CREP sites.

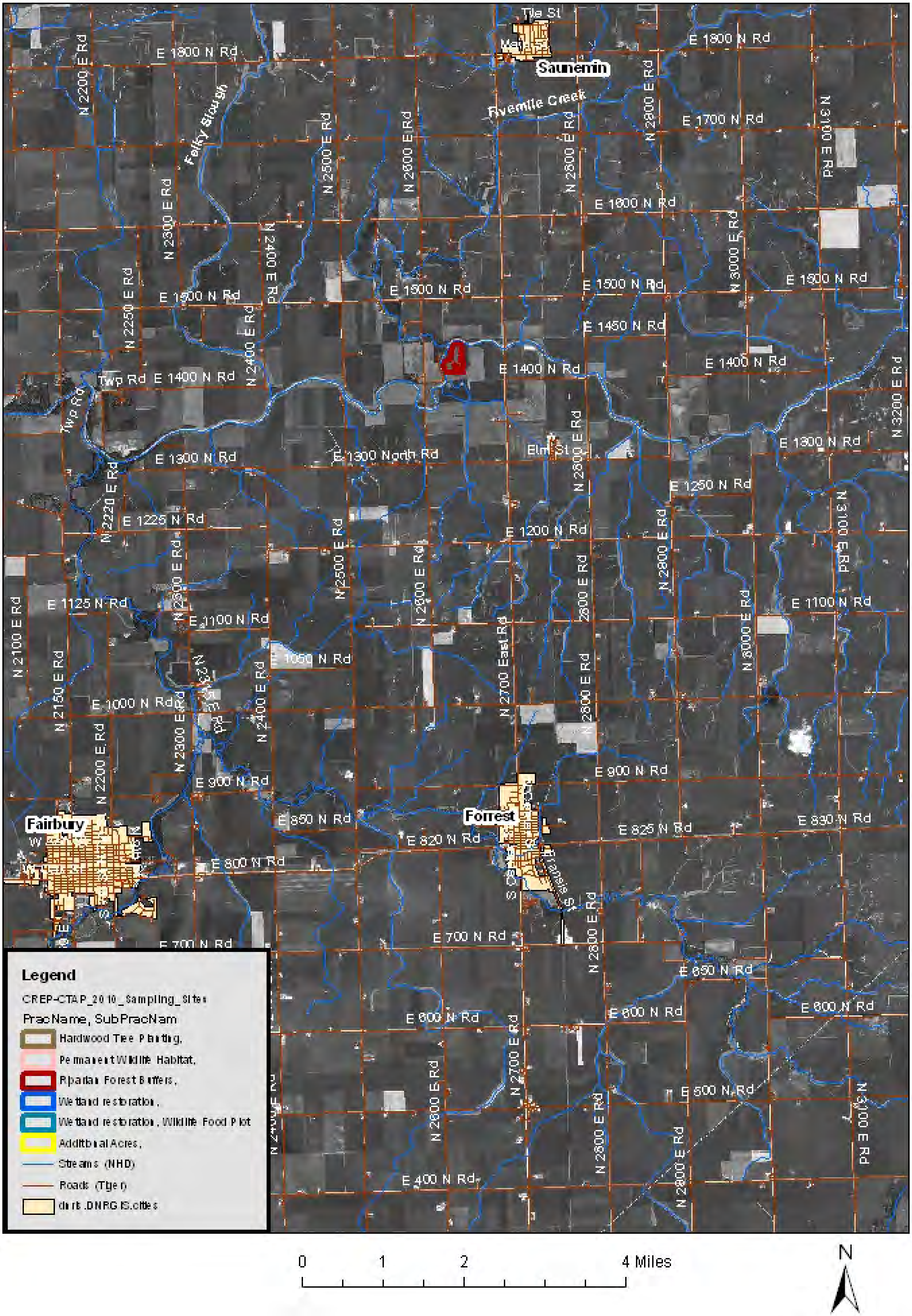
Table 4. Average species richness of grassland and wetland sites sampled as part of the Critical Trends Assessment Program between 1997 and 2006. Random sites are those that are randomly selected based on predetermined habitat criteria (Molano-Flores 2003). Reference sites are those that were selected based on their high vegetation quality and generally high ecological integrity. Most reference sites are dedicated Illinois Nature Preserves. These data are based on species sampled in 20 ¼ m^2 quadrats at each site.

	Native Species	Non-native Species	Total Species	Native Species (% cover)	Non-native Species (% cover)
Random Grassland (n=159)	9.84	7.18	17.32	23.99	75.59
Random Prairie (n=14)	24.14	5.64	30.07	69.75	30.13
Reference Prairie (n=11)	41.00	2.73	44.82	97.14	2.49
Random Wetland (n=169)	12.38	2.46	15.16	60.31	38.98
Reference Wetland (n=11)	24.09	1.27	25.82	94.06	5.72

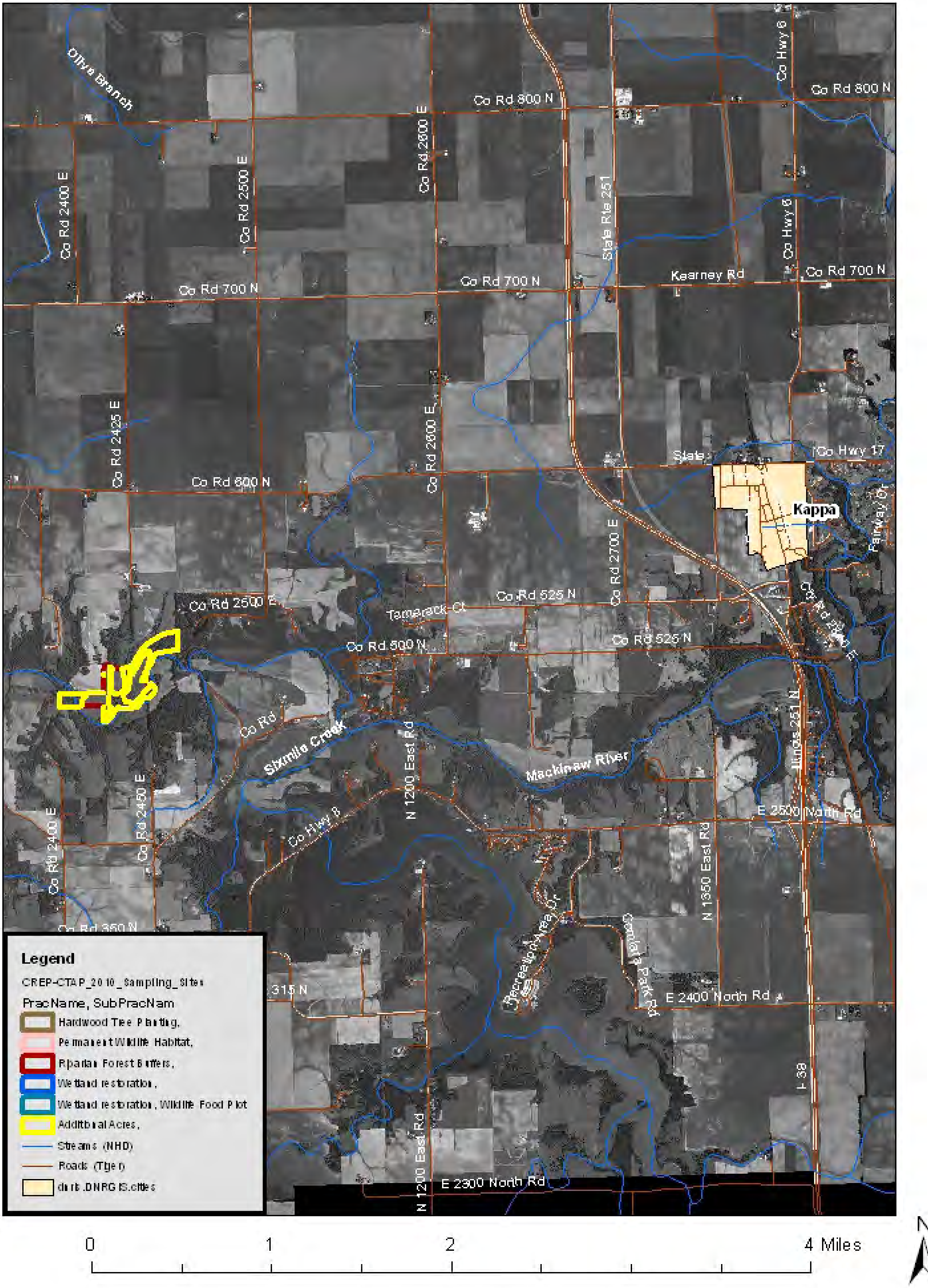
Figure 2. INHS CTAP and IDNR biologists assessed vegetation and recorded observations at eight CREP sites across central Illinois during June and September 2010.

Figure 3. Examples of wildlife observed during site visits (e.g. butterflies).

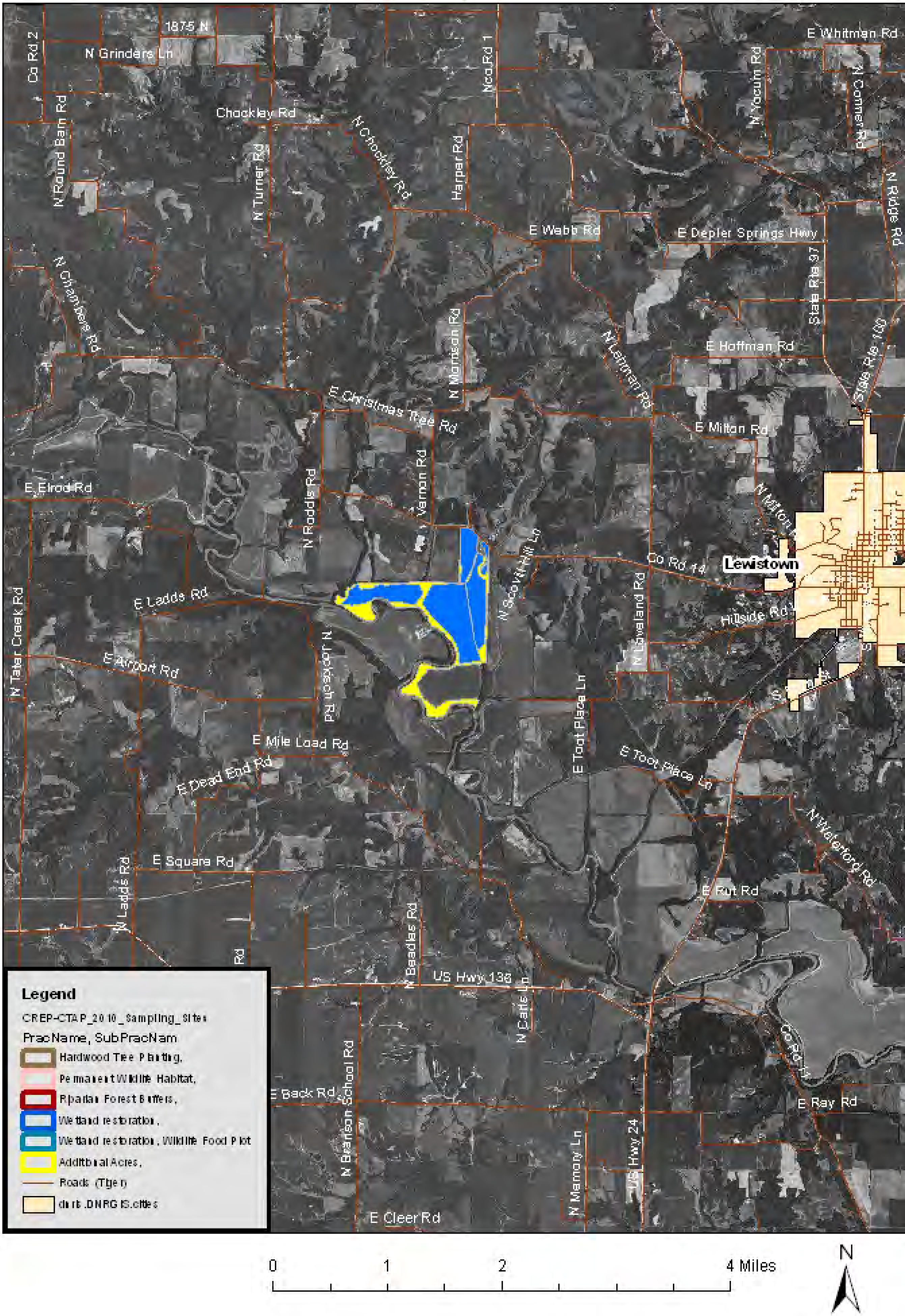
CREP 2010 Sampling Site #2 - Livingston Co



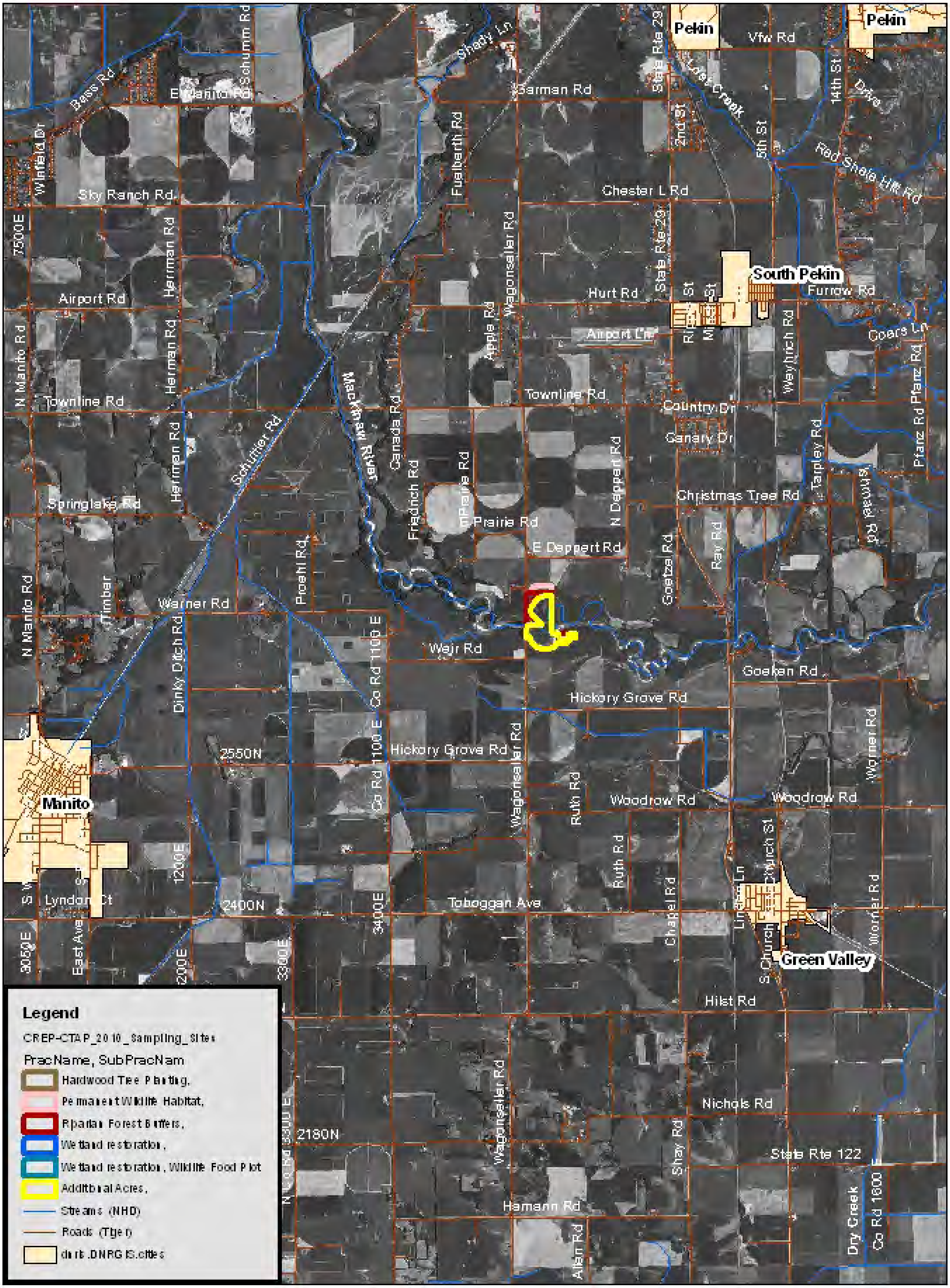
CREP 2010 Sampling Site #3 - Woodford Co



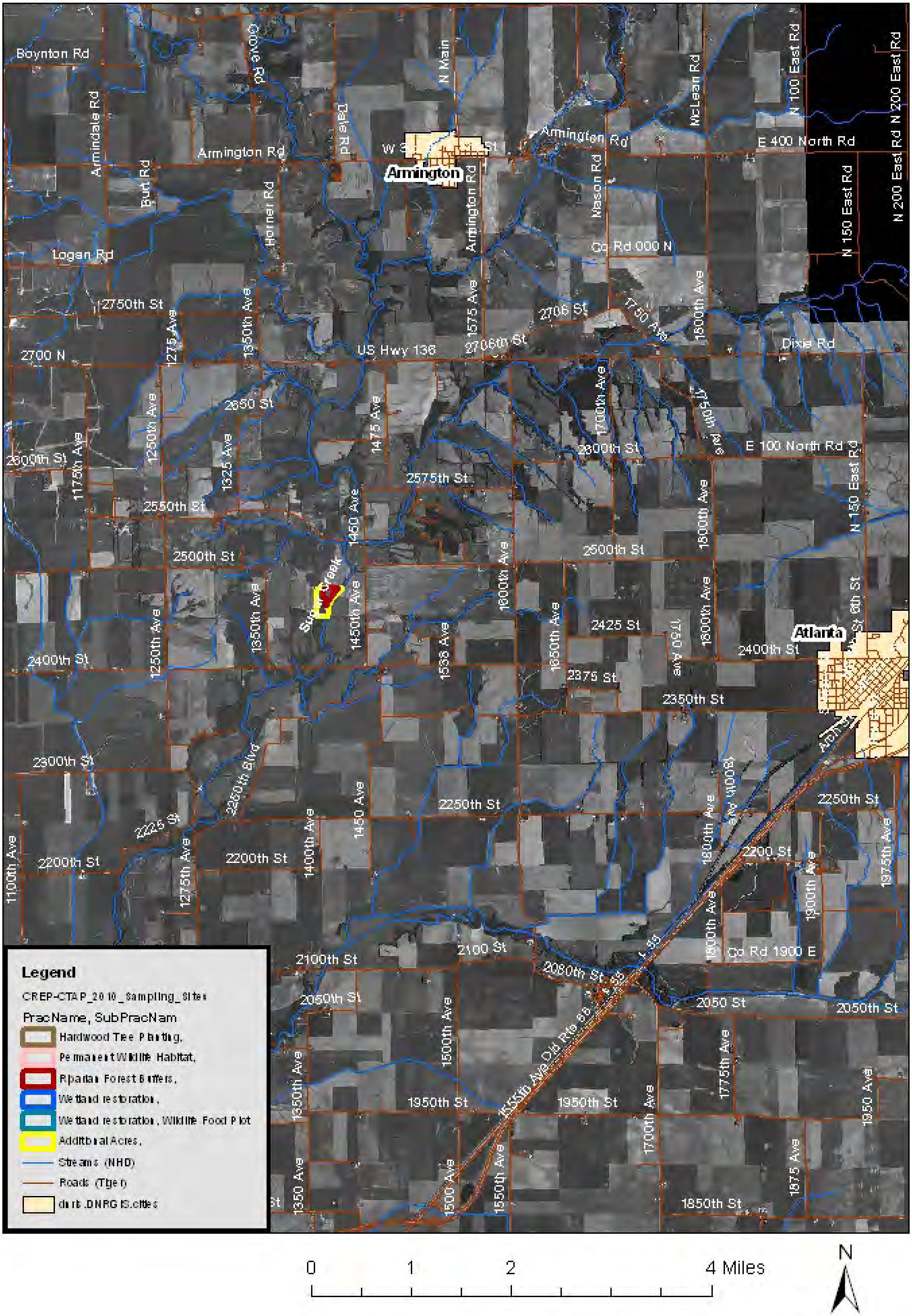
CREP 2010 Sampling Site #4 - Fulton Co



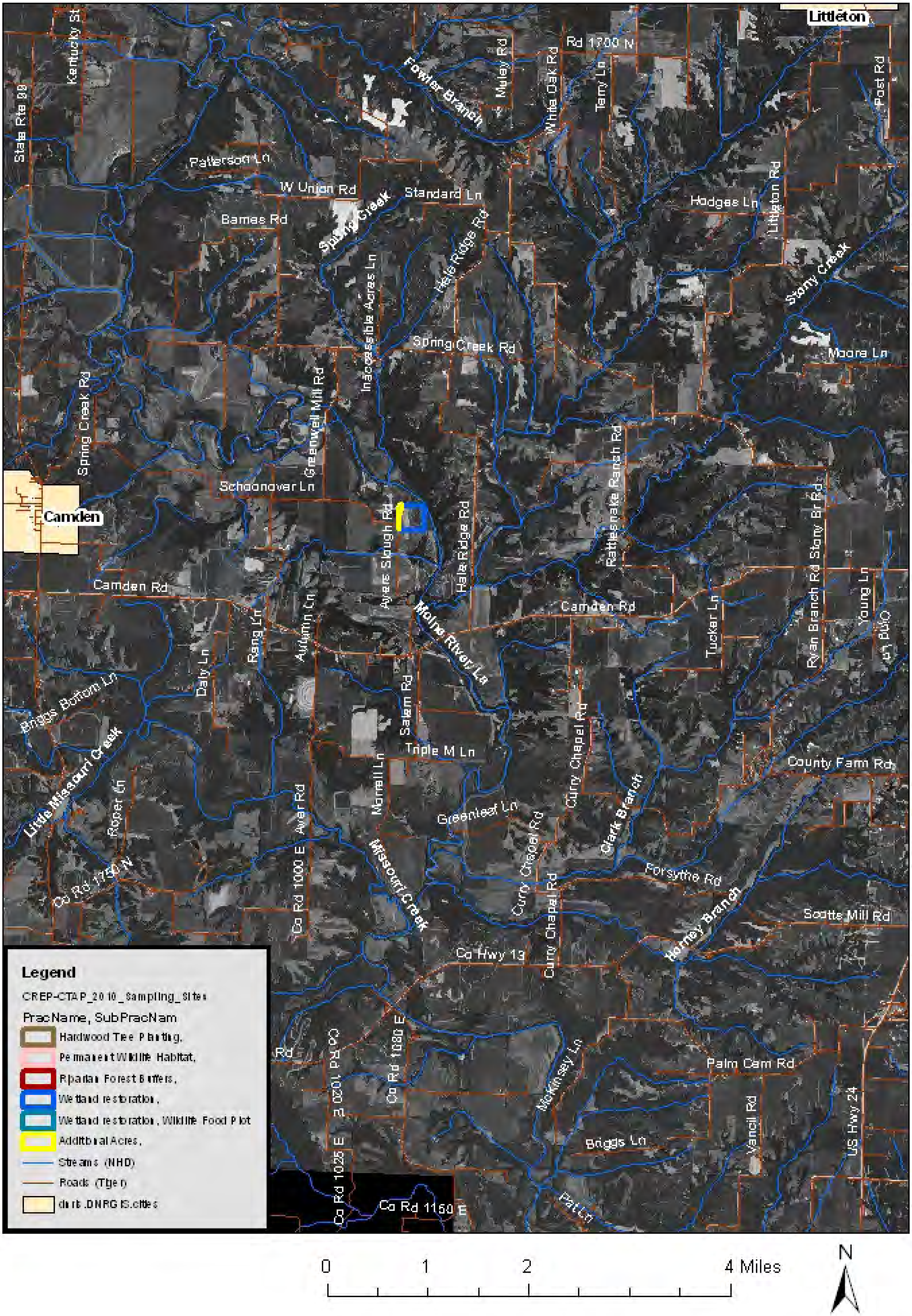
CREP 2010 Sampling Site #5 - Tazewell Co



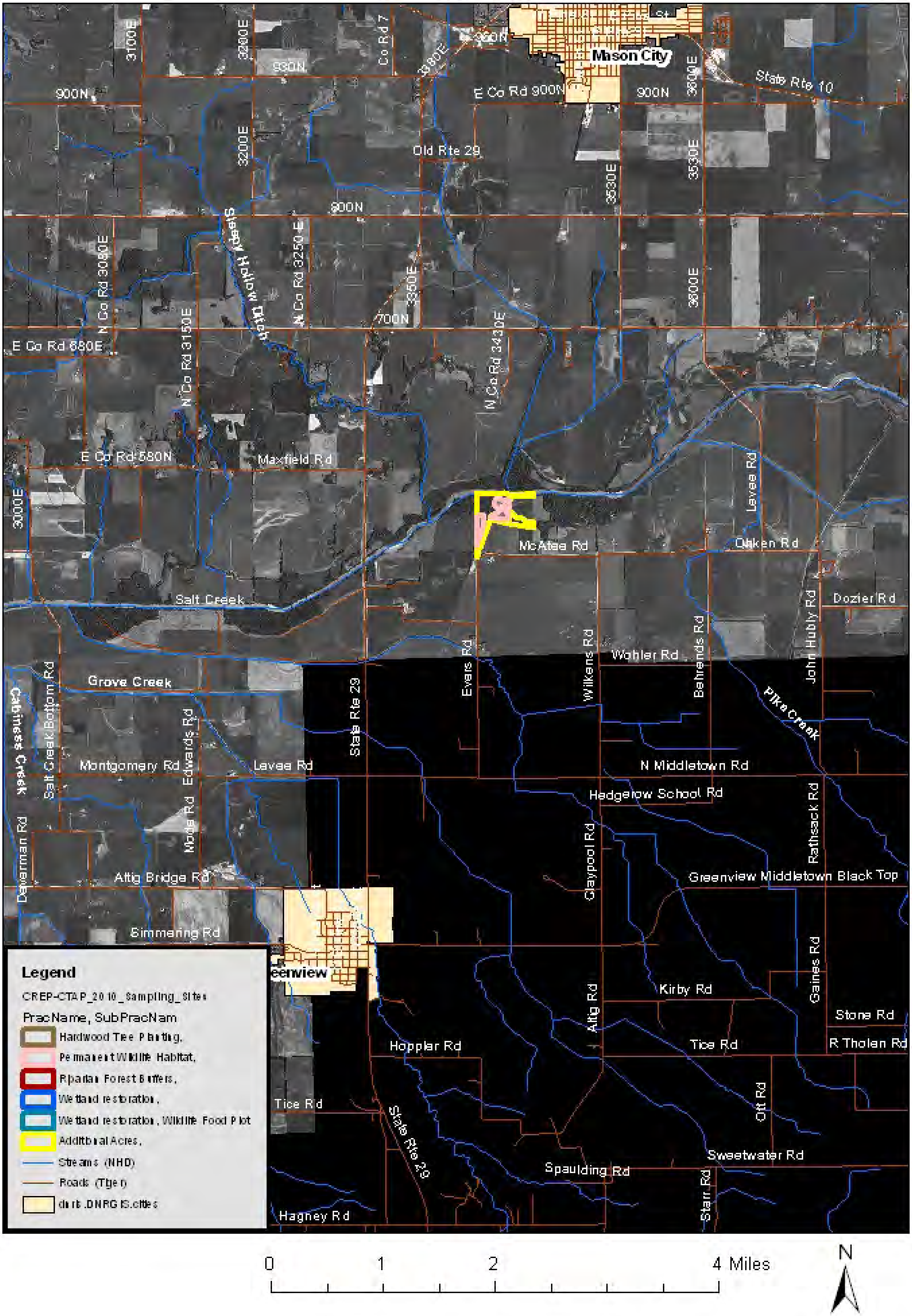
CREP 2010 Sampling Site #6 - Logan Co



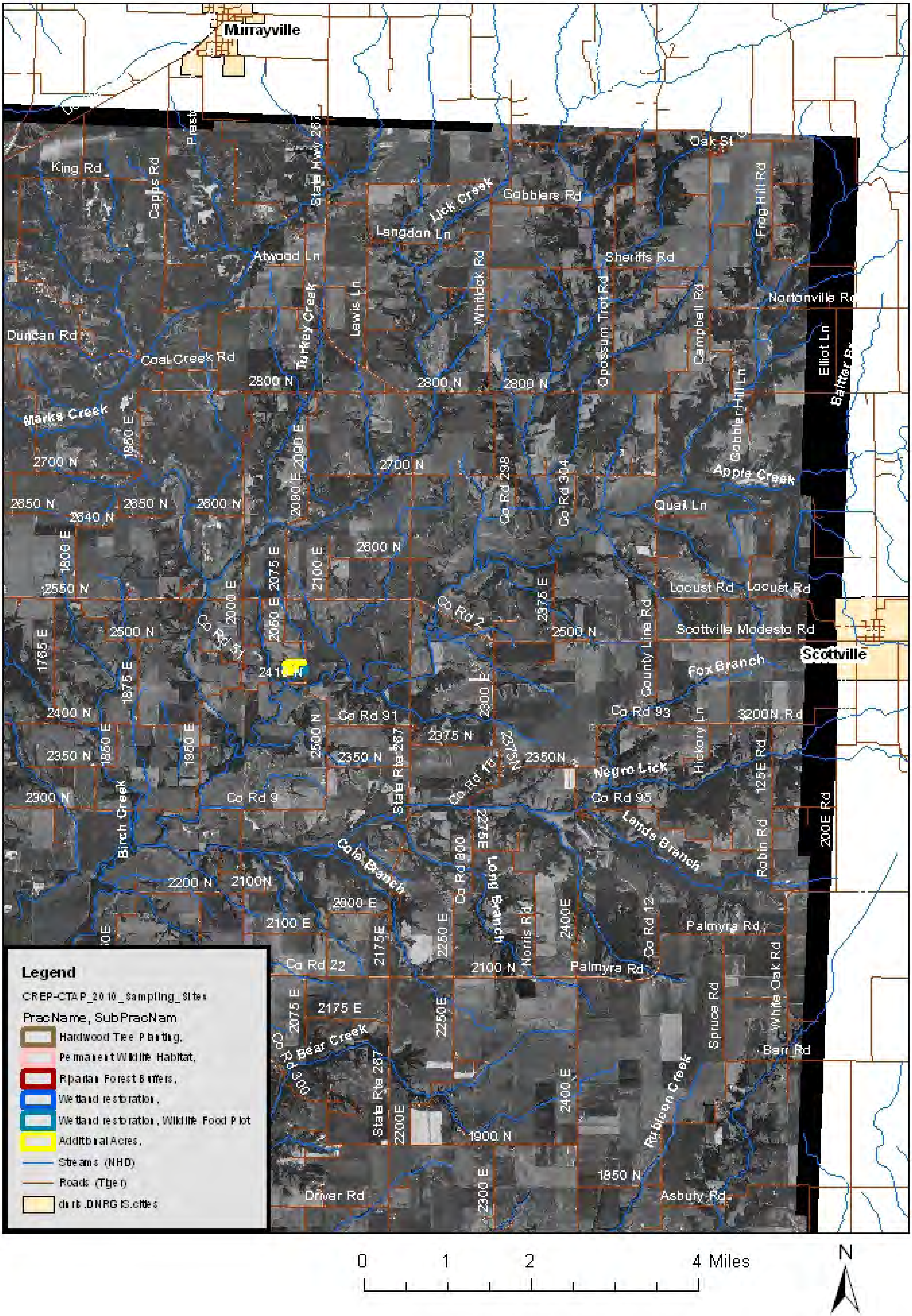
CREP 2010 Sampling Site #7 - Schuyler Co



CREP 2010 Sampling Site #8 - Menard Co



CREP 2010 Sampling Site #9 - Greene Co



APPENDIX 2

Site Photos 2010

Site #2 Livingston County

Site #3 Woodford County


Site #4 Fulton County


Site #5 Tazewell County


Site #6 Logan County


Site #7 Schuyler County


Site #8 Menard County


Site #9 Greene County

APPENDIX 3

Site Descriptions and Species Lists

Pilot Study Site Number: 2
Landowner: Richard Miller
County: Livingston
State ID: 19990058
Practices and Acreage: CP22 (Riparian Forest Buffers), 37 acres
Year implemented or enrolled: 1999 (15 yr.)

Date of Site Visit: 15 September 2010
Investigators: James Ellis and Jessica Forrest
Duration of visit: 2.25 hours
Visit Notes: The investigators met with the landowner who took them back to the CREP practice and accompanied them during the site visit.

General Vegetation Structure: Much of the practice was dominated by herbaceous vegetation ranging between three to four feet tall with some areas of taller forbs. A few areas were unusually short reaching at most two to three feet. Trees both planted and adventive were scattered throughout the site ranging from about two feet up to eight feet tall. It was easy to see across most of the field.

Dominant plant species noted: Dominant species included yellow foxtail, common goldenrod, tall boneset, and hairy aster. Planted oak trees were evident.

General notes: This CREP practice is on low ground in a bend of the North Fork of the Vermilion River, and historically this land was probably forested floodplain. Much of site floods occasionally during the spring, and the landowner noted there was water on the site earlier this year.

The landowner planted bare root stock trees in 2000 in rows 15 feet apart, and mowed between the rows for a few years. He also replanted some of the trees at a later date. Oaks (white, swamp white, bur, and pin) were evident during the visit ranging from about three to over five feet tall. Deer browse was evident on almost every oak tree examined. Other tree species both planted (e.g. green ash, wild black cherry) and adventive (e.g. eastern cottonwood) were taller reaching up to eight feet. A row of osage orange trees planted as seeds by landowner was growing well on the east side of the site.

One patch of the invasive reed canary grass was observed on the west side of the site not far from the river.

Other: A thin strip of floodplain forest separated the CREP practice from the river on the north and west sides. Dominant trees included eastern cottonwood, honey locust, and silver maple. Large stands of the invasive amur honeysuckle were also noted.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Ambrosia artemisiifolia	common ragweed	N	
Ambrosia trifida	giant ragweed	N	some thick patches
Apocynum cannabinum	dogbane	N	
Asclepias syriaca	common milkweed	N	
Asclepias verticillata	horsetail milkweed	N	
Aster ericoides	heath aster	N	small patch
Aster pilosus	hairy aster	N	
Bidens sp.	beggar's ticks	N	
Bromus inermis	Hungarian brome	I	
Carya ovata	shagbark hickory	N	very short
Cassia fasciculata	golden cassia	N	
Cephalanthus occidentalis	buttonbush	N	
Cirsium discolor	pasture thistle	N	
Crataegus mollis	downy hawthorn	N	small, adventive
Daucus carota	Queen Anne's lace	I	
Desmodium canadense	showy tick trefoil	N	
Elymus canadensis	Canada wild rye	N	
Elymus virginicus	Virginia wild rye	N	
Eupatorium altissimum	tall boneset	N	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	planted, few 8-10'
Gleditsia triacanthos	honey locust	N	5-6'
Juglans nigra	black walnut	N	planted, few 8-10'
Lactuca canadensis	wild lettuce	N	
Lonicera maackii	amur honeysuckle	I	thick along edges of field
Maclura pomifera	hedge apple	I	scattered, 5-8', planted row on E side
Melilotus sp.	sweet clover	I	
Oenothera biennis	common evening primrose	N	
Phalaris arundinacea	reed canary grass	I	patches on west side
Plantago rugelii	red-stalked plantain	N	
Platanus occidentalis	sycamore	N	
Poa pratensis	Kentucky blue grass	I	
Populus deltoides	eastern cottonwood	N	few, 6-7'
Prunus serotina	wild black cherry	N	planted
Quercus palustris	pin oak	N	planted by seed, N side
Quercus bicolor	swamp white oak	N	planted, 5-6'
Quercus macrocarpa	burr oak	N	5'

Quercus rubra	northern red oak	N	
Quercus stellata	post oak	N	not a positive ID
Rosa multiflora	Japanese rose	I	
Setaria faberi	giant foxtail	I	
Setaria glauca	yellow foxtail	I	
Solidago canadensis	common goldenrod	N	
Taxodium distichum	bald cypress	N	planted
Toxicodendron radicans	poison ivy	N	some big patches
Trifolium pratense	red clover	I	
Ulmus rubra	slippery elm	N	
Vitis riparia	riverbank grape	N	

Pilot Study Site Number: 3
Landowner: Dan Thompson
County: Woodford
State ID: 2001851
Practices and Acreage: CP 22 (Riparian Forest Buffers), 30.1; ADD (Additional Acres), 22.1
Year implemented or enrolled: 2001 (PERM)

Date of Site Visit: 15 September 2010
Investigators: James Ellis and Jessica Forrest
Duration of visit: 2 hours
Visit Notes: The investigators met with the landowner who led them back to the CREP practice. Access to the site is through the landowner's cattle pasture and gates with electric fences needed to be opened and monitored by the landowner.

General Vegetation Structure: The CREP practices were dominated by fairly tall (four to five feet) and lush herbaceous vegetation with scattered trees evident. Trees dominated some portions of the fields especially closer the to river.

Dominant plant species noted: Common goldenrod dominated much of the practice; sycamore and box elder dominated areas close to the river.

General notes: There are three fields at this site that all sit within the floodplain of the Mackinaw River, and these field occasionally flood. Planted oaks and pecans are evident and growing well in areas that are topographically higher within the fields. Scattered oaks eight to twelve feet tall are particularly evident in the 6-acre field. Adventive tree species are dominant in areas that are a bit lower and closer to the river. These species included sycamore, eastern cottonwood, box elder, honey locust, and green ash, and they ranged from ten to twenty feet tall. The trees were especially tall and thick at the south end of the 13-acre field.

A few invasive woody species scattered through the practices included autumn olive and amur honeysuckle.

Other: The landowner maintains mowed paths around the practices, which facilitated access during the visit. The landowner also said he mowed and sprayed herbicide between the tree rows up until about a year ago. These fields were flooded earlier in the year, but impacts from flooding this were not particularly evident based on the current vegetation.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Acer negundo	boxelder	N	closer to river, 10-12'
Acer saccharinum	silver maple	N	saplings
Agrostis alba	red top	N	
Amaranthus sp.	pigweed	.	
Asclepias syriaca	common milkweed	N	

Aster pilosus	hairy aster	N	
Aster simplex	panicled aster	N	
Bidens frondosa	common beggar's ticks	N	
Carya illinoensis	pecan	N	planted, 5-6'
Cirsium arvense	field thistle	I	
Dactylis glomerata	orchard grass	I	
Diospyros virginiana	persimmon	N	small, planted
Echinochloa crusgalli	barnyard grass	I	
Elaeagnus umbellata	autumn olive	I	scattered, big shrubs
Festuca arundinacea	tall fescue	I	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	
Gleditsia triacanthos	honey locust	N	adventive, 8-10'
Helianthus hirsutus	bristly sunflower	N	
Impatiens capensis	spotted touch-me-not	N	
Juglans nigra	black walnut	N	planted?, 3'
Juniperus virginiana	eastern red cedar	N	few, 8'
Leersia oryzoides	rice cut grass	N	
Lobelia siphilitica	great blue lobelia	N	
Lonicera maackii	amur honeysuckle	I	scattered, big shrubs
Morus alba	white mulberry	I	
Muhlenbergia schreberi	nimblewill	N	
Oenothera biennis	common evening primrose	N	
Panicum sp.	panic grass	.	
Pastinaca sativa	wild parsnip	I	
Phalaris arundinacea	reed canary grass	I	
Phyla lanceolata	fog fruit	N	
Plantago rugelii	red-stalked plantain	N	
Platanus occidentalis	sycamore	N	few, 8-10'
Poa pratensis	Kentucky blue grass	I	
Polygonum hydropiperoides	mild water pepper	N	
Polygonum persicaria	lady's thumb	I	
Populus deltoides	eastern cottonwood	N	scattered, 5-8'
Prunus serotina	wild black cherry	N	3-4'
Ptelea trifoliata	wafer ash	N	
Quercus alba	white oak	N	planted, 3-8'
Quercus bicolor	swamp white oak	N	planted, 8'
Quercus macrocarpa	burr oak	N	planted, 3-8'
Quercus palustris	pin oak	N	planted, 8'
Quercus rubra	northern red oak	N	planted, 8-12'
Rubus pensylvanicus	Yankee blackberry	N	
Rudbeckia laciniata	wild golden glow	N	
Ruellia strepens	smooth ruellia	N	
Rumex crispus	curly dock	I	
Salix nigra	black willow	N	
Setaria glauca	yellow foxtail	I	
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	
Ulmus americana	American elm	N	

Ulmus rubra	slippery elm	N
Urtica dioica	tall nettle	N
Verbesina alternifolia	wingstem	N
Vitis riparia	riverbank grape	N
Xanthium strumarium	cocklebur	N

Pilot Study Site Number: 4
Landowner:
County: Fulton
State ID: 20000439
Practices and Acreage: CP23 (Wetland Restoration), 279.5 acres; ADD (Additional Acres), 110.7 acres
Year implemented or enrolled: 2000 (PERM)

Date of Site Visit: 9 September 2010
Investigators: James Ellis, Tim Rye, and Rachel Pirkle
Duration of visit: 1.75 hours
Visit Notes: This is a fairly large site, and because of time constraints, all CREP practices were not thoroughly explored. Site evaluation was facilitated by driving on mowed paths between fields with occasional forays into a field.

General Vegetation Structure: Trees characterized all of the CREP practices except for one. Planted and adventive trees ranging from eight to over fifteen feet tall were a dominant feature. Where there was space between trees, a thick and diverse growth of herbaceous vegetation covered the ground.

Dominant plant species noted: Planted trees dominated and they included bur oak, sycamore, river birch, green ash, white oak, and pin oak. Eastern cottonwood was thick in some areas. Dominant herbs included giant foxtail, tall boneset, common goldenrod, and giant ragweed.

General notes: Two different treatments were noted at this site: tree planting or not. One field at the north end of the site to the west of the access lane was dominated by tall boneset with only a few scattered trees which included eastern cottonwood, eastern red cedar, wild black cherry, and black willow. Other herbs included prairie cord grass, big bluestem, Indian grass, barnyard grass, switch grass, and common goldenrod. The north end of the field was much wetter as reflected in the vegetation: prairie cord grass, reed canary grass, blue vervain, and soft-stem bulrush.

Trees dominated the other three fields, which comprised the majority of the site. Some areas had grown tall and thick enough to form a canopy. In these areas, herbaceous ground cover vegetation was sparse. This was especially noted at the south end of the site where approximately fifteen-foot tall eastern cottonwoods were the dominant vegetation.

Some areas within the fields and along the access land were fairly wet with some standing water and saturated soils.

Other: During the visit, the investigators walked into the north field on what appeared to be tractor tire tracks. Vegetation had been smashed down and what appeared to be soybeans were scattered along these tire tracks.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
N field to E of lane			
Agrostis alba	red top	N	
Agrostis hyemalis	hair grass	N	
Ambrosia trifida	giant ragweed	N	dominant
Asclepias syriaca	common milkweed	N	
Aster pilosus	hairy aster	N	
Aster simplex	panicled aster	N	
Betula nigra	river birch	N	planted, 10-12'
Bidens aristosa	swamp marigold	N	
Bromus inermis	Hungarian brome	I	
Carex lacustris	common lake sedge	N	
Carex sp.	sedge	N	wet spot on S end
Cirsium discolor	pasture thistle	N	
Echinochloa crusgalli	barnyard grass	I	wet spot on S end
Elaeagnus umbellata	autumn olive	I	dead stems
Eleocharis obtusa	blunt spike rush	N	wet spot on S end
Erechtites hieracifolia	fireweed	N	
Eupatorium serotinum	late boneset	N	dominant
Fraxinus pennsylvanica var. subintegerrima	green ash	N	planted, 8'
Lemna minor	small duckweed	N	in wet ditch
Lindernia dubia	false pimpernel	N	wet spot on S end
Lycopus americanus	common water horehound	N	wet spot on S end
Pastinaca sativa	wild parsnip	I	
Phalaris arundinacea	reed canary grass	I	scattered patches
Platanus occidentalis	sycamore	N	many, scattered, 10-12'
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	seedlings, scattered trees 15'
Quercus alba	white oak	N	planted, 5-6'
Quercus macrocarpa	burr oak	N	planted, 10'
Quercus palustris	pin oak	N	planted, 5-6'
Rumex crispus	curly dock	I	
Salix nigra	black willow	N	small
Setaria faberi	giant foxtail	I	dominant
Setaria glauca	yellow foxtail	I	
Solidago canadensis	common goldenrod	N	dominant
Spartina pectinata	prairie cord grass	N	wet spot on S end
Taxodium distichum	bald cypress	N	planted, 8-10'
Xanthium strumarium	cocklebur	N	
N field to W of lane			
Acalypha rhomboidea	three-seeded mercury	N	
Agropyron repens	quack grass	I	
Ambrosia artemisiifolia	common ragweed	N	
Andropogon gerardii	big bluestem	N	
Asclepias syriaca	common milkweed	N	
Aster lateriflorus	side-flowering aster	N	wetter area at N end

Bidens frondosa	common beggar's ticks	N	
Cirsium discolor	pasture thistle	N	
Conyza canadensis	horseweed	N	
Cyperus esculentus	field nut sedge	N	wetter area at N end
Echinochloa crusgalli	barnyard grass	I	big patches
Eupatorium serotinum	late boneset	N	dominant
Juncus nodosus	joint rush	N	wetter area at N end
Juniperus virginiana	eastern red cedar	N	few, small
Lobelia siphilitica	great blue lobelia	N	
Lycopus americanus	common water horehound	N	
Lythrum alatum	winged loosestrife	N	wetter area at N end
Oenothera biennis	common evening primrose	N	
Panicum capillare	old witch grass	N	
Panicum dichotomiflorum	fall panicum	N	
Panicum virgatum	prairie switch grass	N	
Phalaris arundinacea	reed canary grass	I	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	few, scattered, 10-15'
Prunus serotina	wild black cherry	N	6-8'
Salix exigua	sandbar willow	N	patch 8-10'
Salix nigra	black willow	N	6-8'
Scirpus tabernaemontanii	soft-stem bulrush	N	wetter area at N end
Setaria faberi	giant foxtail	I	
Silphium perfoliatum	cup plant	N	wetter area at N end
Solidago canadensis	common goldenrod	N	
Sorghastrum nutans	Indian grass	N	
Spartina pectinata	prairie cord grass	N	thick patches along access lane
Tripsacum dactyloides	gama grass	N	
Typha latifolia	broad-leaved cattail	N	wetter area at N end
Ulmus rubra	slippery elm	N	saplings
Verbena hastata	blue vervain	N	wetter area at N end
S field to W of lane			
Acer saccharinum	silver maple	N	seedlings
Amaranthus sp.	pigweed	.	
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Aster lateriflorus	side-flowering aster	N	
Bidens frondosa	common beggar's ticks	N	
Convolvulus arvensis	field bindweed	I	
Elymus virginicus	Virginia wild rye	N	
Morus alba	white mulberry	I	seedlings
Phalaris arundinacea	reed canary grass	I	
Polygonum coccineum	water smartweed	N	
Polygonum pensylvanicum	pinkweed	N	
Populus deltoides	eastern cottonwood	N	thick at south end, 15'
Quercus palustris	pin oak	N	common, scattered,

Sagittaria latifolia	common arrowhead	N	8-10' in wet ditch along lane
Spartina pectinata	prairie cord grass	N	thick patches along access lane
Xanthium strumarium	cocklebur	N	

Pilot Study Site Number: 5
Landowner: Henry Garlisch
County: Tazewell
State ID: 20071293
Practices and Acreage: CP4D (Permanent Wildlife Habitat), 7.1; CP22 (Riparian Forest Buffers), 18.8; ADD (Additional Acres), 66.79
Year implemented or enrolled: 2007 (PERM)

Date of Site Visit: 29 June 2010
Investigators: James Ellis and Jessica Forrest
Duration of visit: 4 hours
Visit Notes: The CREP practices on this site were assessed, but due to limited access, the Additional Acres were not assessed. This was the first site visited for the 2010 field season.

General Vegetation Structure: The vegetation structure varied depending on the practice and management of a particular field. Fields 1 and 3 were planted with trees, which were about six to eight feet tall with an understory of grass and forbs ranging from two to five feet tall. Field 1A had been recently mowed. Fields 4 and 5 were dominated by two to three foot tall grass with scattered forbs.

Dominant plant species noted: Planted oaks, common goldenrod, tall boneset, sweet clover, smooth brome, and poison ivy dominated Fields 1 and 3. Smooth brome dominated fields 4 and 5.

General notes: Planted white oak, bur oak, green ash, red oak, swamp white oak, and black walnut ranging about six to ten feet tall were evident and dominant in Field 1. Most of the trees had canopies touching with few open spaces. Trees in Field 3 were evident, but seemingly not as abundant possibly due to more frequent flooding in this field. Six to eight foot tall black walnut, green ash, and bur oak were noted. Poison ivy was especially this in this field along with common goldenrod.

Field 1A on the north had been mowed recently, so it was difficult to evaluate the vegetation. Stumps of small trees and shrubs were noted as well as Canada thistle, barnyard grass, side oats grama, tall fescue, and smooth brome.

Fields 4 and 5 were almost solid smooth brome. There were a few patches of common goldenrod and other forbs in Field 5. Field 4 is a thin strip of land sandwiched between the Mackinaw River and a row-crop ag field. Weedy forbs were more evident here probably due to disturbance from the river and field edge.

Other: Due to recent heavy rains, the Mackinaw River, which runs through part of the property, was running high and strong. The river marks the north edge of Field 4. This outside curve of a bend in the river had been cutting into the river as evident by the steep cut bank (bare dirt exposed, about six foot drop straight down from the top of the bank to the water). There were some chunks of soil and vegetation, which had evidently slid into the river. As the river moves and eats away at Field 4, should the original dimensions of the field be maintained to comply with the CREP contract?

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Field 1, 12.6 acres			
Ambrosia artemisiifolia	common ragweed	N	
Ambrosia trifida	giant ragweed	N	
Asclepias syriaca	common milkweed	N	
Boehmeria cylindrica	false nettle	N	
Bouteloua curtipendula	side-oats grama	N	
Bromus commutatus	hairy brome	I	
Bromus inermis	Hungarian brome	I	dominant
Campsis radicans	trumpet creeper	N	
Celtis occidentalis	hackberry	N	saplings
Cirsium arvense	field thistle	I	
Convolvulus arvensis	field bindweed	I	
Conyza canadensis	horseweed	N	
Cornus sp.	dogwood	N	
Dactylis glomerata	orchard grass	I	
Dalea purpurea	purple prairie clover	N	
Dipsacus laciniatus	cut-leaved teasel	I	big patches
Elaeagnus umbellata	autumn olive	I	few, scattered
Erigeron annuus	annual fleabane	N	
Eupatorium serotinum	late boneset	N	
Festuca arundinacea	tall fescue	I	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	8-10''
Gleditsia triacanthos	honey locust	N	saplings
Juglans nigra	black walnut	N	8-10'
Melilotus alba	white sweet clover	I	big patches
Morus alba	white mulberry	I	small
Panicum virgatum	prairie switch grass	N	
Poa pratensis	Kentucky blue grass	I	
Populus deltoides	eastern cottonwood	N	small
Prunus serotina	wild black cherry	N	small
Quercus rubra	northern red oak	N	planted, 8-10'
Quercus alba	white oak	N	planted, 6-8'
Quercus bicolor	swamp white oak	N	planted, 8-10'
Quercus macrocarpa	burr oak	N	planted, 6-8'
Schizachyrium scoparium	little bluestem	N	
Silphium perfoliatum	cup plant	N	
Solidago canadensis	common goldenrod	N	
Ulmus pumila	Siberian elm	I	8-10'
Urtica dioica	tall nettle	N	
Vitis riparia	riverbank grape	N	

Field 5, 7.3 acres			
Bromus inermis	Hungarian brome	I	dominant
Solidago canadensis	common goldenrod	N	
Rumex altissimus	pale dock	N	
Field 4, 3.1 acres			
Abutilon theophrasti	buttonweed	I	
Amaranthus sp.	pigweed	.	
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Aster pilosus	hairy aster	N	
Bromus inermis	Hungarian brome	I	dominant
Chenopodium album	lamb's quarters	I	
Conium maculatum	poison hemlock	I	
Convolvulus arvensis	field bindweed	I	
Datura stramonium	jimsonweed	I	
Humulus japonicus	Japanese hops	I	
Lactuca serriola	prickly lettuce	I	
Morus alba	white mulberry	I	small
Phytolacca americana	pokeweed	N	
Rumex altissimus	pale dock	N	
Rumex crispus	curly dock	I	
Solidago canadensis	common goldenrod	N	
Solidago gigantea	late goldenrod	N	
Sisymbrium loeselii	tall hedge mustard	I	
Teucrium canadense	germander	N	
Xanthium strumarium	cocklebur	N	
Field 3, 2.9 acres			
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Erigeron annuus	annual fleabane	N	
Eupatorium altissimum	tall boneset	N	
Fraxinus pennsylvanica	red ash	N	planted, 6-10'
Gleditsia triacanthos	honey locust	N	
Ipomoea pandurata	wild sweet potato	N	
Juglans nigra	black walnut	N	planted, 6-8'
Laportea canadensis	Canada wood nettle	N	
Melilotus alba	white sweet clover	I	
Quercus macrocarpa	burr oak	N	planted, 6-8'
Rudbeckia laciniata	wild golden glow	N	
Solidago canadensis	common goldenrod	N	dominant
Teucrium canadense	germander	N	
Toxicodendron radicans	poison ivy	N	dominant
Ulmus pumila	Siberian elm	I	
Urtica dioica	tall nettle	N	
Verbena urticifolia	white vervain	N	

Pilot Study Site Number: 6
Landowner: Jeff Faulk
County: Logan
State ID: 20010760
Practices and Acreage: CP22 (Riparian Forest Buffers), 7.5 acres; ADD (Additional Acres), 19.7 acres
Year implemented or enrolled: 2001 (PERM)

Date of Site Visit: 2 September 2010
Investigator: James Ellis
Duration of visit: 1.5
Visit Notes: Foot access to the site is from the east with a walk on a homemade suspension bridge over Sugar Creek. The creek was flowing strong from recent rainfall. The CREP practice on-site was evaluated but the adjacent woodland enrolled as Additional Acres was not. A mowed path on the north edge of the field facilitated assessment.

General Vegetation Structure: The field was characterized by a thick growth of herbaceous plants ranging from four to five feet high. The investigator could easily see across the field, but the lush growth of plants made walking through the field difficult. A few small trees were present.

Dominant plant species noted: Common goldenrod and Kentucky bluegrass dominated much of the practice. Patches of reed canary grass and rice cut grass were dominant in lower, wetter parts of the field.

General notes: This field sits partly within the floodplain of Sugar Creek. The west side of the field is the highest point and the land slopes gently to east towards the creek. Sugar Creek probably occasionally floods a portion of this field, but there was no evidence of flooding in the field this season. The east portion of the field was wetter as evidenced by the plant species.

The investigator noted a few small oak trees and dogwood shrubs and these were assumed to have been planted. At most these woody plants were three to four feet tall and looked to have been browsed by whitetail deer.

Other:

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Acalypha rhomboidea	three-seeded mercury	N	
Ambrosia trifida	giant ragweed	N	
Apocynum cannabinum	dogbane	N	
Aster lateriflorus	side-flowering aster	N	
Aster pilosus	hairy aster	N	common
Aster simplex	panicled aster	N	

Calamagrostis canadensis	blue joint grass	N	
Calystegia sepium	American bindweed	N	
Carex sp.	sedge	N	
Carex tribuloides	awl-fruited oval sedge	N	
Carex vulpinoidea	brown fox sedge	N	
Cinna arundinacea	common wood reed	N	
Cirsium discolor	pasture thistle	N	
Cornus drummondii	rough-leaved dogwood	N	small, browsed, planted?
Cyperus strigosus	long-scaled nut sedge	N	
Echinochloa crusgalli	barnyard grass	I	
Elaeagnus umbellata	autumn olive	I	scattered shrubs, 6-8'
Epilobium coloratum	cinnamon willow herb	N	
Eupatorium altissimum	tall boneset	N	
Gleditsia triacanthos	honey locust	N	few, small, 6'
Glyceria striata	fowl manna grass	N	
Helianthus hirsutus	bristly sunflower	N	
Impatiens capensis	spotted touch-me-not	N	
Juglans nigra	black walnut	N	scattered, small, 5'
Lactuca canadensis	wild lettuce	N	
Leersia oryzoides	rice cut grass	N	
Lobelia siphilitica	great blue lobelia	N	
Oxalis stricta	tall wood sorrel	N	
Panicum virgatum	prairie switch grass	N	
Phalaris arundinacea	reed canary grass	I	small patches
Phyla lanceolata	fog fruit	N	
Poa pratensis	Kentucky blue grass	I	
Polygonum punctatum	smartweed	N	
Quercus bicolor	swamp white oak	N	browsed, 3'
Rosa multiflora	Japanese rose	I	
Ruellia strepens	smooth ruellia	N	
Scirpus atrovirens	dark green rush	N	
Sicyos angulatus	bur cucumber	N	
Solidago gigantea	late goldenrod	N	dominant at S end
Taraxacum officinale	common dandelion	I	
Toxicodendron radicans	poison ivy	N	
Ulmus rubra	slippery elm	N	
Verbena urticifolia	white vervain	N	
Vernonia missurica	Missouri ironweed	N	
Xanthium strumarium	cocklebur	N	

Pilot Study Site Number: 7
Landowner:
County: Schuyler
State ID: 20000241
Practices and Acreage: CP23 (Wetland Restoration), 38.5 acres; ADD (Additional Acres), 1.5 acres
Year implemented or enrolled: 2000 (PERM)

Date of Site Visit: 1 September 2010
Investigator: James Ellis
Duration of visit: 2 hours
Visit Notes: The LaMoine River was out of its banks late into the summer and flooded this CREP site along with the parts of the road to access the site. Muddy road conditions and a vehicle not adequate to traverse the mud forced the investigator to walk quite a ways to access site.

General Vegetation Structure: This site had fairly sparse herbaceous vegetation that was from two to four feet tall with widely scattered to densely clumped trees. In most areas the trees were around 20 feet tall, and the canopies were not touching. In a few areas the tree canopies were touching.

Dominant plant species noted: The herbaceous layer was dominated by marsh elder and panicled aster with some patches of water smartweed. The trees were almost exclusively eastern cottonwood.

General notes: This field sits in the floodplain of the LaMoine River, which lies directly to the north and east. An old oxbow of the river is also to the north and west of the site. Based on areas of bare soil where water ponded and windrows of vegetation debris in some areas, this area had flooded multiple times throughout the summer. Heavy rains came late in July, which forced the LaMoine River out of its banks and into the surrounding floodplain. There were still areas of saturated soil and standing water on the day of the visit.

Tall eastern cottonwood with a few scattered sycamore dominated the east half of the site. The west side was bit higher, and the trees were not as tall, but some areas had dense patches of green ash and silver maple saplings three to five feet tall. A few pin and burr oaks were detected. Marsh elder and other weedy annual species dominated the herbaceous layer.

Other: A rectangular plot of land probably about 5 acres in size almost directly in the center of the site had been recently tilled or worked with a disc. This area was devoid of any vegetation. This strip of disturbed soil also continued south onto the adjacent property.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Acer negundo	boxelder	N	seedlings

Acer saccharinum	silver maple	N	seedlings
Amaranthus sp.	pigweed	.	
Ammannia coccinea	long-leaved ammannia	N	
Apocynum cannabinum	dogbane	N	
Aster simplex	panicled aster	N	dominant
Calystegia sepium	American bindweed	N	
Carex grayi	common bur sedge	N	
Carex lupulina	common hop sedge	N	
Carex tribuloides	awl-fruited oval sedge	N	
Carex vulpinoidea	brown fox sedge	N	
Cephalanthus occidentalis	buttonbush	N	
Convolvulus arvensis	field bindweed	I	
Cynanchum laeve	blue vine	N	
Cyperus strigosus	long-scaled nut sedge	N	
Echinochloa crusgalli	barnyard grass	I	
Eleocharis obtusa	blunt spike rush	N	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	seedlings to small trees
Gleditsia triacanthos	honey locust	N	
Iva annua	marsh elder	N	huge stands
Morus alba	white mulberry	I	saplings
Muhlenbergia schreberi	nimblewill	N	
Phalaris arundinacea	reed canary grass	I	few patches
Phyla lanceolata	fog fruit	N	
Platanus occidentalis	sycamore	N	few trees, 10'
Polygonum coccineum	water smartweed	N	large patch
Polygonum hydropiper	water pepper	I	
Polygonum pensylvanicum	pinkweed	N	
Polygonum punctatum	smartweed	N	
Populus deltoides	eastern cottonwood	N	dominant, 10-20'
Quercus macrocarpa	burr oak	N	few, small
Quercus palustris	pin oak	N	few, small
Rumex altissimus	pale dock	N	
Sagittaria latifolia	common arrowhead	N	
Setaria glauca	yellow foxtail	I	
Sida spinosa	prickly sida	I	
Stachys tenuifolia	smooth hedge nettle	N	
Ulmus rubra	slippery elm	N	saplings
Vitis riparia	riverbank grape	N	
Xanthium strumarium	cocklebur	N	

Pilot Study Site Number: 8
Landowner: Steven Bergman
County: Menard
State ID: 20081357
Practices and Acreage: CP4D (Permanent Wildlife Habitat), 19.5 acres; ADD (Additional Acres), 47.42 acres.
Year implemented or enrolled: 2008 (PERM)

Date of Site Visit: 2 September 2010
Investigator: James Ellis
Duration of visit: 1.25 hours
Visit Notes: Three fields comprise this site. Vehicle and walking access was easy and facilitated by mowed paths through parts of the fields.

General Vegetation Structure: A fairly thick growth of tall grasses five to six feet tall with scattered annual and perennial forbs characterized the three fields on this site.

Dominant plant species noted: Prairie switch grass and common goldenrod dominated all three fields with common ragweed as a dominant species in Field 13.

General notes: These three fields sit within a fairly large area of topographically low and flat landscape to the south of the channelized Salt Creek. The fields are surrounded by second growth forest. Old river oxbows and ditches are nearby, but the investigator was uncertain if these field flooded from Salt Creek. There was not physically evidence that showed these fields flooded this year.

Vegetation structure was fairly even with scattered forbs in a matrix of tall grasses. Prairie switch grass, Indian grass, and big bluestem were evident along with giant foxtail and crabgrass. Weedy forbs include common ragweed, common goldenrod, horseweed, and tall boneset.

Other: There was an area on the west end of Field 9 that looked like it had been tilled or worked with a disc earlier in the year. There was lush growth of weedy species with virtually no big grasses. Smartweeds, giant foxtail, barnyard grass, and horseweed dominated this disturbed area.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

Scientific Name	Common Name	Origin	Notes
Field #10			
Agrostis alba	red top	N	
Ambrosia artemisiifolia	common ragweed	N	
Andropogon gerardii	big bluestem	N	
Bidens frondosa	common beggar's ticks	N	
Chamaesyce maculata	nodding spurge	N	
Conyza canadensis	horseweed	N	
Digitaria sanguinalis	hairy crab grass	I	common

Echinochloa crusgalli	barnyard grass	I	
Elymus canadensis	Canada wild rye	N	
Erechtites hieracifolia	fireweed	N	
Erigeron annuus	annual fleabane	N	
Eupatorium altissimum	tall boneset	N	
Muhlenbergia schreberi	nimblewill	N	
Oxalis stricta	tall wood sorrel	N	
Panicum capillare	old witch grass	N	
Panicum virgatum	prairie switch grass	N	dominant
Plantago rugelii	red-stalked plantain	N	
Polygonum punctatum	smartweed	N	around the edges
Ratibida pinnata	yellow coneflower	N	
Rudbeckia hirta	black-eyed Susan	N	
Rudbeckia subtomentosa	sweet black-eyed Susan	N	
Setaria faberi	giant foxtail	I	thick patches
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	scattered, common
Sorghastrum nutans	Indian grass	N	evenly scattered
Toxicodendron radicans	poison ivy	N	
Verbena hastata	blue vervain	N	
Field #9 (additional species)			
Acer saccharinum	silver maple	N	more of the same seedlings
Amaranthus sp.	pigweed	.	
Aster lateriflorus	side-flowering aster	N	
Aster simplex	panicled aster	N	
Eclipta prostrata	yerba de tajo	N	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	seedlings
Leersia oryzoides	rice cut grass	N	around edges
Panicum dichotomiflorum	fall panicum	N	
Sida spinosa	prickly sida	I	
Xanthium strumarium	cocklebur	N	
Field #13			
Abutilon theophrasti	buttonweed	I	
Ambrosia artemisiifolia	common ragweed	N	dominant
Bidens aristosa	swamp marigold	N	
Cirsium discolor	pasture thistle	N	
Convolvulus arvensis	field bindweed	I	
Conyza canadensis	horseweed	N	
Daucus carota	Queen Anne's lace	I	
Echinochloa crusgalli	barnyard grass	I	
Elymus canadensis	Canada wild rye	N	
Erigeron annuus	annual fleabane	N	
Eupatorium altissimum	tall boneset	N	
Gleditsia triacanthos	honey locust	N	
Heliopsis helianthoides	false sunflower	N	
Panicum capillare	old witch grass	N	
Panicum dichotomiflorum	fall panicum	N	
Panicum virgatum	prairie switch grass	N	dominant

Polygonum persicaria	lady's thumb	I	
Ratibida pinnata	yellow coneflower	N	
Setaria faberi	giant foxtail	I	
Solanum carolinense	horse nettle	N	
Solidago canadensis	common goldenrod	N	dominant
Solidago gigantea	late goldenrod	N	
Sorghastrum nutans	Indian grass	N	
Verbena hastata	blue vervain	N	
Xanthium strumarium	cocklebur	N	

Site Number: 9
Landowner:
County: Greene
State ID: 20041069
Practices: CP23 (Wetland Restoration), 11.3 acres; ADD (Additional Acres), 8.7 acres
Year implemented or enrolled: 2004 (PERM)

Date of Site Visit: 30 June 2010
Investigator: James Ellis
Duration of visit: 2.25 hours
Visit Notes: With deep ditches along a narrow gravel road, parking was limited adjacent to site. Standing water and a thick growth of trees precluded a thorough assessment of the south half of the site.

General Vegetation Structure: Much of the site was dominated by thick and diverse growth of herbaceous vegetation ranging from four to five feet tall. There were scattered trees over eight feet tall to the west, and a dense growth trees could be seen that dominated the south section of the site.

Dominant plant species noted: The site ranged from dry to wet and botanical diversity was moderately high. Wet areas were dominated by reed canary grass, cattail, dark green bulrush, and *Carex* spp. On the higher ground on the west side of the site, common goldenrod, annual fleabane, big bluestem, Queen Anne's lace, wild parsnip, and tall boneset were dominants. Silver maple and eastern cottonwood ranging from eight to over ten feet tall dominated the south end of the site.

General notes: Due to topographic diversity within the site there were differences in drainage conditions from dry to wet that could be detected as vegetation differences across the site. Standing water and saturated soils were also evident over the south half of the site. The differences in drainage conditions contributed to botanical diversity as a whole with no particular species of plants completely dominating the dry or wet areas. Tall trees in the wet south portion did tend to dominate, but herbaceous vegetation could be seen under the trees as well. The investigator also noted that much of the botanical diversity in the wet areas came from native plant species. The invasive reed canary grass was present on the site, but it did not dominate. A thick patch of reed canary grass outside of the CREP practice was noted along the gravel road.

Other: There were large ditches and pond that probably had been excavated in the past. These areas of open water were in the middle and on the west side of the site. They seemed fairly deep or at least deep enough not to support aquatic vegetation, but plants like cattails were abundant along the edges.

The adjacent second growth, bottomland forest of mostly silver maple was not assessed during this visit.

Species List Disclaimer: *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property.*

Scientific Name	Common Name	Origin	Notes
Acer saccharinum	silver maple	N	adventive, 4-7'
Acorus calamus	sweet flag	I	wet areas
Agrostis alba	red top	N	
Allium vineale	field garlic	I	dry areas
Andropogon gerardii	big bluestem	N	
Apocynum cannabinum	dogbane	N	
Asclepias incarnata	swamp milkweed	N	wet areas
Asclepias syriaca	common milkweed	N	dry areas
Aster pilosus	hairy aster	N	dry areas
Aster simplex	panicled aster	N	
Bidens frondosa	common beggar's ticks	N	wet areas
Bromus commutatus	hairy brome	I	dry areas
Bromus inermis	Hungarian brome	I	dry areas
Calystegia sepium	American bindweed	N	dry areas
Campsis radicans	trumpet creeper	N	
Carex annectens	large yellow fox sedge	N	wet areas
Carex davisii	awned graceful sedge	N	
Carex frankii	bristly cattail sedge	N	wet areas
Carex grisea	wood gray sedge	N	
Carex molesta	field oval sedge	N	wet areas
Carex normalis	spreading oval sedge	N	wet areas
Cirsium vulgare	bull thistle	I	
Conium maculatum	poison hemlock	I	few
Convolvulus arvensis	field bindweed	I	
Cyperus sp.	nut sedge	.	
Daucus carota	Queen Anne's lace	I	dry areas
Desmanthus illinoensis	Illinois bundle flower	N	
Eleocharis obtusa	blunt spike rush	N	wet areas
Elymus virginicus	Virginia wild rye	N	
Erigeron annuus	annual fleabane	N	dry areas
Eupatorium serotinum	late boneset	N	dry areas
Festuca arundinacea	tall fescue	I	
Fraxinus pennsylvanica var. subintegerrima	green ash	N	adventive, 4-7'
Geum laciniatum	rough avens	N	
Glechoma hederacea	ground ivy	I	
Gleditsia triacanthos	honey locust	N	adventive, 6-10'
Glyceria striata	fowl manna grass	N	wet areas
Hypericum punctatum	spotted St. John's-wort	N	dry areas
Iva annua	marsh elder	N	
Juncus torreyi	Torrey's rush	N	wet areas
Ludwigia alternifolia	seedbox	N	wet areas
Lycopus virginicus	bugle weed	N	wet areas
Lysimachia ciliata	fringed loosestrife	N	wet areas

Lythrum alatum	winged loosestrife	N	wet areas
Pastinaca sativa	wild parsnip	I	dry areas
Penthorum sedoides	ditch stonecrop	N	wet areas
Phalaris arundinacea	reed canary grass	I	wet areas
Phleum pratense	timothy	I	
Phyla lanceolata	fog fruit	N	wet areas
Poa pratensis	Kentucky blue grass	I	
Polygonum pensylvanicum	pinkweed	N	
Polygonum punctatum	smartweed	N	wet areas
Polygonum ramosissimum	bushy knotweed	N	
Populus deltoides	eastern cottonwood	N	adventive, 6-10'
Potentilla norvegica	rough cinquefoil	N	dry areas
Rubus allegheniensis	common blackberry	N	
Rumex altissimus	pale dock	N	
Rumex crispus	curly dock	I	
Salix nigra	black willow	N	adventive, 4-7'
Scirpus atrovirens	dark green rush	N	dominant, wet areas
Scirpus georgianus	bristleless dark green rush	N	wet areas
Scirpus pendulus	red bulrush	N	wet areas
Setaria faberi	giant foxtail	I	dry areas
Solanum carolinense	horse nettle	N	dry areas
Solidago canadensis	common goldenrod	N	dominant, dry areas
Solidago gigantea	late goldenrod	N	wet areas
Teucrium canadense	germander	N	
Torilis japonica	Japanese hedge parsley	I	dry areas
Toxicodendron radicans	poison ivy	N	
Typha angustifolia	narrow-leaved cattail	I	wet areas
Verbena urticifolia	white vervain	N	dry areas
Verbesina alternifolia	wingstem	N	wet areas
Vernonia missurica	Missouri ironweed	N	wet areas
Xanthium strumarium	cocklebur	N	

A Summary of the Illinois Conservation Reserve Enhancement Program Habitat Monitoring Program Pilot Study

Abstract

A monitoring program for determining success of restoration efforts is a suggested component of government programs (Mulvaney et al. 2006). Monitoring provides an evaluation process in which we can learn from our successes or correct our failures, making a monitoring program an essential component of restoration (Gayaldo 2005). The Illinois Department of Natural Resources (IDNR) is currently involved in thousands of Conservation Reserve Enhancement Program (CREP) easements. However, no formal monitoring program is in place for monitoring the habitat at CREP easements. Thus, the purpose of this research is to develop and implement a CREP habitat monitoring program. A monitoring program developed for another IDNR program, the Natural Resource Damage Assessment Program (NRDA), will be used as a template (Forrest 2008). A pilot study was conducted in the summers of 2009 and 2010 by having Critical Trend Assessment Program (CTAP) botanists evaluate the habitat at a random number of CREP easements. CREP and Soil and Water Conservation District (SWCD) staff attended a few of the site inspections and received some training by CTAP botanists for how to conduct qualitative assessments of the CREP easements. The CTAP botanists found the overall CREP habitat sites to be in good condition for providing wildlife habitat. However, unless active management takes place sites will degrade over time. Therefore, more research needs to be done to determine where the management resources will come from (funds and staff). In the mean time CREP staff should continue conducting site visits to assess the overall vegetation quality of CREP practices and make recommendations for management techniques. The CREP staff can adapt and implement the monitoring program designed in this research to all of their easements and track the overall success of the program.

Study Description

A pilot study was utilized for the CREP habitat monitoring program to answer the question: how do you go about monitoring CREP sites for habitat quality? The below information explains the background for the pilot study.

A partnership formed to conduct the pilot study was with the Critical Trends Assessment Program, which is sponsored by IDNR and housed at the Illinois Natural History Survey (INHS)

(INHS and IDNR 2001). CTAP is a long-term habitat monitoring program run by professional scientists who collect statewide data on the following Illinois habitats: forests, wetlands, grasslands, and streams[1] (INHS and IDNR 2001). The monitoring protocols to monitor these attributes are valuable references (see http://ctap.inhs.uiuc.edu/mp/monitoring.asp). The main goal of CTAP is to collect baseline data on the current conditions of the aforementioned habitats and determine how the habitats are changing over time (INHS and IDNR 2001). CTAP has been collecting detailed biological data in 600 randomly selected sites from across the state on both public and private lands since 1997 (INHS and IDNR 2001). The data is then compared to baseline/reference sites, limited to Illinois Nature Preserves or other protected high-quality natural areas (INHS and IDNR 2001). This information is then used to help support efforts to preserve, restore, and manage Illinois habitats (INHS and IDNR 2001). For example, CTAP data can be used to compare to Illinois Natural Areas Inventory (INAI) data. If CTAP staff find that INAI sites are not regenerating oaks as well as the random CTAP sites, they can help site managers understand what makes this happen: i.e. disturbance (logging disturbance has allowed a better oak/hickory regeneration). Another comparison that can be made is how one particular species is doing compared to another. If for example CTAP staff finds that forest birds are doing better in general compared to wetland and grassland birds, they can make educated inferences regarding the cause of this particular trend: i.e. fragmentation is greater with respect to wetlands and grasslands, an increase in edges leads to an increase in predation, which decreases nest success. Similarly, the CREP program would like to utilize the expertise of the CTAP program to help direct CREP conservation initiatives. When comparing CREP sites with CTAP sites, for example, if CTAP staff finds that CREP sites are not functioning as well, CREP staff can research the causes and determine how to manage the area for better biological and ecological performance. CREP staff can also compare what is going on locally at the CREP practices to CTAP's regional trends, and then make management decisions if areas need improved.

Methods

Using ArcGIS software, GPS coordinates were obtained from CTAP staff for the proposed 2009 and 2010 CTAP sampling sites. As previously mentioned, these sites are randomly selected sites throughout the state of Illinois, occurring on both public and private property. Using established shapefiles for all of Illinois CREP easements a GIS query was conducted for CREP easements in a 1km radius of CTAP 2009 and 2010 sampling sites. The query provided a random number of CREP sampling sites to assess. In the case where additional sites were preferred or regional gaps were present sites were selected at random using the ArcGIS software.

For the 2009 pilot study assessment, 11 sites were selected (Fig 1). The study was continued in the summer of 2010 to increase the number of sites assessed (8 additional sites, see Fig 1) and to get another year of data (may give us temporal differences etc.). There were multiple practices represented at various sites. When combining both years there were a total of 58 practices assessed. Out of the 58 practices there were 10 different practices represented which provided for a good diversity of habitat types. The size of the sites varied from 1.50 acres to 361, with a total of 2,927.82 acres assessed for the pilot study.

These sites were evaluated by conducting a site visit to each site with CTAP botanists. The CTAP botanists documented the vegetation and wildlife present, recorded their general observations of the condition of the project area, and took pictures of the practices (Fig's 2 - 4).

[1] CTAP has dismissed the streams monitoring due to limited resources.

For example invasive species were identified, as well as, desirable species. Before we could access each site, since they were all on private property, IDNR worked with SWCD staff that sent out letters to all the prospective landowners of this project.

Results

The 2009 summer evaluation is documented in an Illinois Natural History Survey Report (Ellis et al. 2010). The following excerpt was stated in the report:

> "Sites ranged from being dominated by native herbaceous species like common goldenrod to being dominated by tree species like silver maple and eastern cottonwood. Native plant species were generally more abundant than non-native species, but invasive species like reed canary grass, field thistle, and amur honeysuckle were present on some sites and could pose future management concerns. Compared to randomly selected wetland and grassland sites sampled as part of the Critical Trends Assessment Program (CTAP), the CREP sites were more botanically rich and diverse, but as sites mature without management or disturbance, plant diversity is expected to decline."

The data from the 2010 summer evaluation is documented in an Illinois Natural History Survey Report (Ellis and Forrest 2010). Some overall observations and recommendations based on the cumulative 2009 and 2010 assessments have been drafted: Regardless of practice, most sites have a similar composition of plant species. This is probably due to similar landscape position (i.e. floodplain), recent cropping history, and passive management with regard to herbaceous plants (i.e. not purposefully planted). Planting more botanically diverse grasslands with native prairie species as opposed to a monoculture of grass or non-native species is preferred and would provide an increase in biodiversity. The hope would be that when botanical diversity increases there is a general increase in insect diversity which would mean a richer food source for wildlife. That being said, the likeliness of success and cost effectiveness needs to be taken into consideration as well. For example, in floodplain areas prone to frequent flooding it would be best to allow the adventive trees to grow and provide habitat compared to spending a lot of resources at diverse tree plantings that would likely fail. Natural regeneration is not always the most desired approach, but sometimes it is necessary. Overall, natural regeneration of an area offers more habitat than a monoculture field. Therefore, it is extremely important to carefully consider the surrounding landscape when selecting a practice to implement. Furthermore, when it comes to an increase in wildlife, proper habitat structure (spacing, cover, food etc.) is also important. In regards to a reduction in sediment, as long as a site is well vegetated then sediment loss will hopefully be decreased.

Overall, the rapid botanical assessment illustrated in this pilot study will hopefully be most useful in invasive and exotic plant species detection. Agency personnel could be trained to easily detect 15-20 species of invasive plant species. With the knowledge of what plants are present at a site staff can then be prepared for proper eradication and control of the unwanted vegetation. This type of management of the conservation practices is important for increasing the diversity and abundance of desired vegetation as well as making sure the vegetation is providing a good structure for wildlife to utilize. On site active management is also important for adequate monitoring. Small mowed paths throughout the practice make it easier for biologists to walk through the site and observe the vegetation and wildlife. As a final overall observation, when landowners care about their property and try to become knowledgeable about the practice and how to properly manage the area it all works really well.

Conclusions

Currently for evaluating the Illinois CREP program there has been a good effort at monitoring the water quality and sedimentation in the Illinois River Watershed. However, there has not been much research done on the quality of wildlife habitat being provided as a result of the implementation of CREP practices. It is well known and documented that setting aside land that buffers streams and rivers is beneficial for our stream systems. However, it is uncertain what type of habitat quality these set aside lands are providing. In order to help answer this question, monitoring techniques should be used in an adaptive management framework. This allows options to be evaluated and corrective actions to be identified when a project is not progressing toward goals (Kentula 2000; Zedler 2005; Schroeder 2006). The lessons learned should then be publicized so future restoration projects can benefit from the evaluation and acquisition of critical information (Moerke and Lamberti 2004).

Considering the level of challenges to designing and implementing a monitoring program it is important to take things step by step. This research represents the first step, utilizing a pilot study to assess the feasibility of implementing the proposed monitoring program and stating the future course of action. Since this was the first step there are not a lot of definitive conclusions which can be drawn at this time. More information will be realized once all the data collected is analyzed and compared to regional trends. More importantly, this plan has served as a starting point for the CREP program staff to implement a long term CREP habitat monitoring program which can advise management of the set aside lands.

Next Steps

For the CTAP/CREP pilot study project visual technology and observations were utilized to evaluate the overall habitat quality of the sites by a “snap shot” approach. Research is being conducted to identify specific performance criteria that can be used as a template for various habitat types. Research is also being conducted to identify indicators that signify a particular habitat is not functioning properly. Historical and reference site data will also be collected and compared to the pilot study data collected. As part of the pilot study, CTAP data will be explored and compared to what is going on locally at the CREP practices and to CTAP’s regional trends. This research will provide the CREP program with the ability to determine whether the CREP easements are delivering the intended resource benefits and if not, which aspect of the practice needs corrective action in order to reach the project/program objectives.

References

Ellis, James, Timothy Rye, and Jessica Forrest. 2010. A Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois. Illinois Natural History Survey Technical Report (09). pp. 1-74.

Ellis, James and Jessica Forrest. 2010. Additional Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois. Illinois Natural History Survey Technical Report (47). pp. 1-52.

Forrest, Jessica. 2008. Development and Implementation of a Natural Resource Damage Assessment (NRDA) Monitoring Program. University of Illinois at Springfield. p. i. - 179.

Gayaldo, Dr. Perry. 2005. NOAA Restoration Center. Project Monitoring. www.nmfs.noaa.gov/habitat/restoration. - accessed 10/18/06.

Illinois Natural History Survey and Illinois Department of Natural Resources. 2001. Critical Trends Assessment Program Keeping an Eye on Illinois Habitats. p. 1-2.

Kentula, M.E. 2000. Perspectives on setting success criteria for wetland Restoration. Ecological Engineering. Vol. 15. pp. 199–209.

Moerke, Ashley. H. and Gary A. Lamberti. 2004. Restoring Stream Ecosystems: Lessons from a Midwestern State. Restoration Ecology. Vol. 12:3. p.327-328, 333.

Mulvaney, R.R. Harris, Melissa Zwahr, Laura Baranowski. 2006. The trend toward accountability: What does it mean for HR managers? Human Resource Management Review. Vol. 16:3. pp. 431-442.

Schroeder, Richard L. 2006. A system to evaluate the scientific quality of biological and restoration objectives using National Wildlife Refuge Comprehensive Conservation Plans as a case study. Journal for Nature Conservation. Vol. 14. pp. 200-206.

Zedler, Joy B. 2005. Ecological restoration: guidance from theory. San Francisco Estuary and Watershed Science. Vol. 3:2. p. 20 and 22.

Figures.

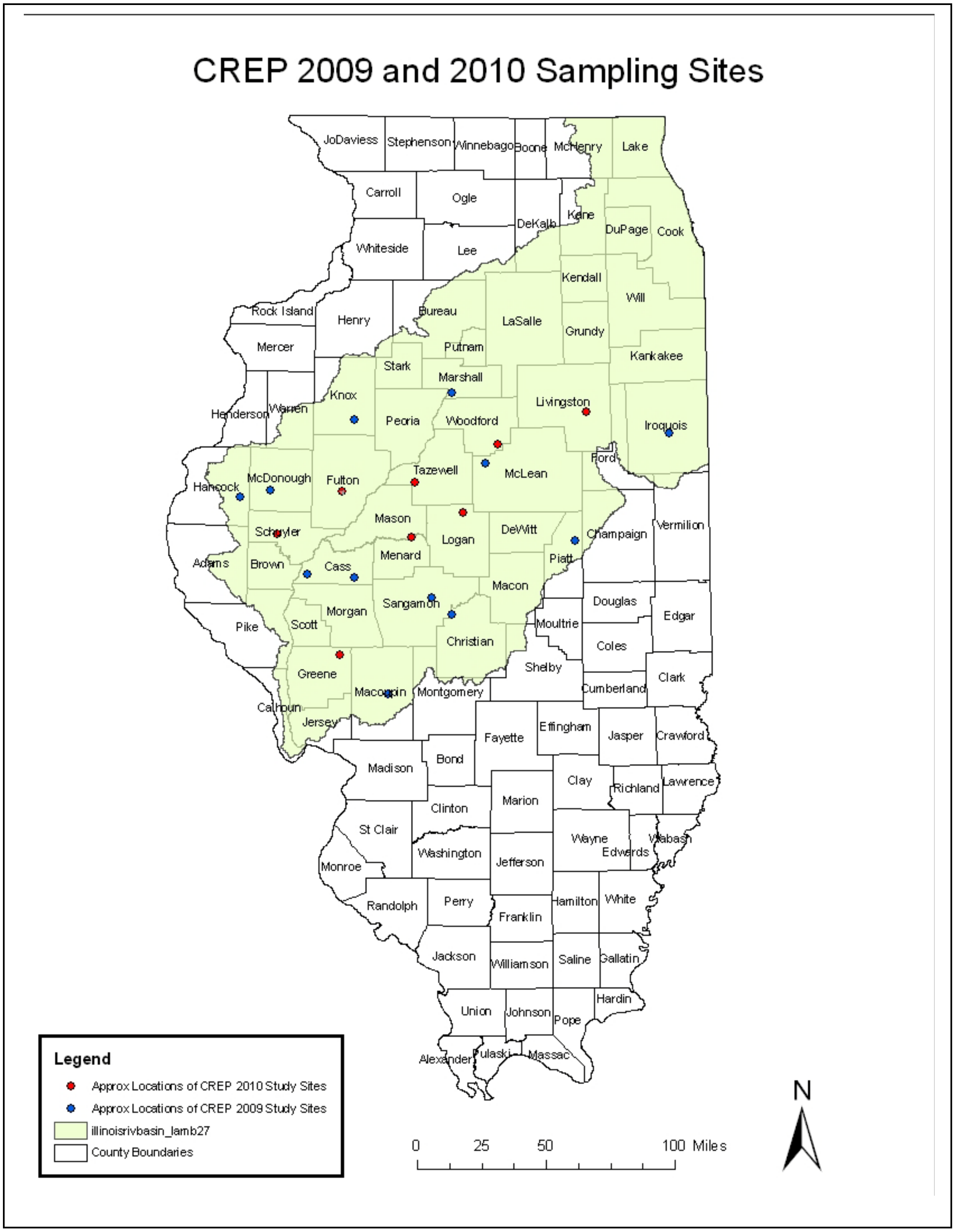


Figure 1. State CREP sites sampled for summer 2009 and 2010 pilot study.

Figure 2. CTAP biologist assessing vegetation and recording observations (during 2010 assessments).

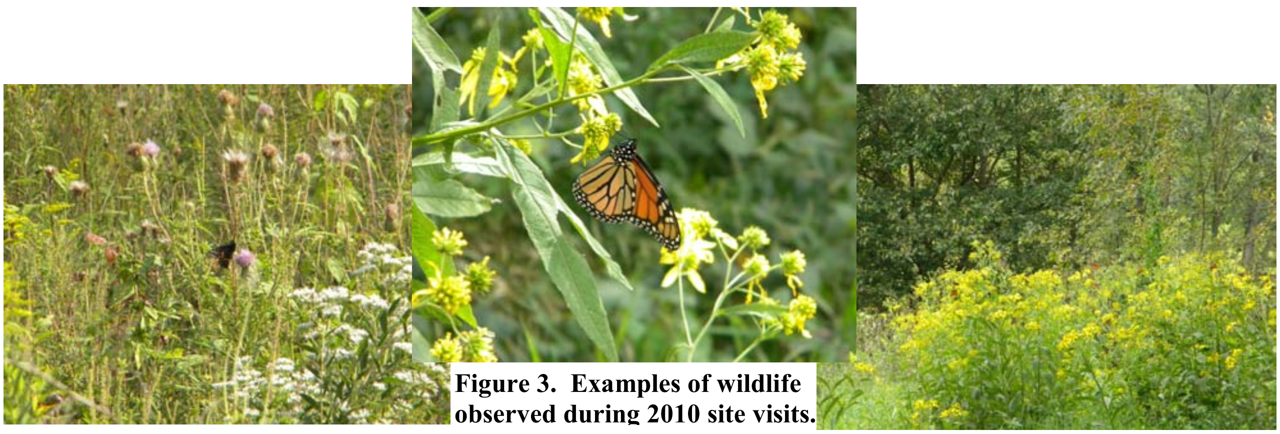


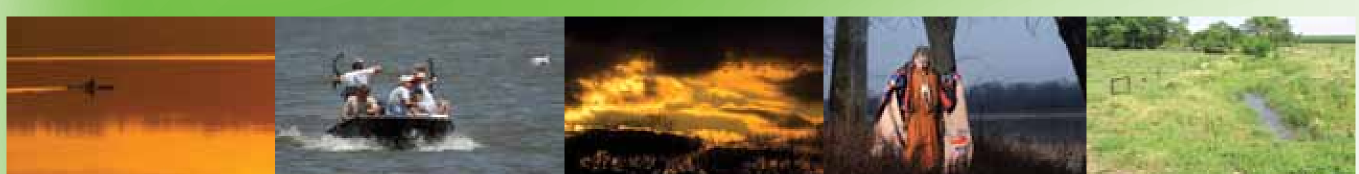
Figure 3. Examples of wildlife observed during 2010 site visits.

Figure 4. CTAP biologist evaluating various CREP practices.
For example: a tree planting, prairie grass/brome, additional acres (2010 site assessment).

A Decade of Changes in the Illinois River Watershed

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has."

- Margaret Mead



This document produced by

United States Department of Agriculture
Natural Resources Conservation Service

Illinois Environmental Protection Agency

October 2009

This document was produced in a joint effort between the Illinois Environmental Protection Agency (IEPA) and the United States Department of Agriculture-Natural Resources Conservation Service (USDA NRCS). Contributing agencies and organizations are listed in the appendix. While these groups submitted considerable documentation, this piece highlights only a portion. For more information on these and other projects and activities, refer to the agencies listed with their web sites on page A-9.

Special Photography Thanks to

Overturf, D. and Marx, G.
"A River Through Illinois"
Carbondale: Southern Illinois University Press, 2008
and
David Zalaznik
"Life Along the Illinois River"
University of Illinois Press, 2009

Cover Photos
(left to right)

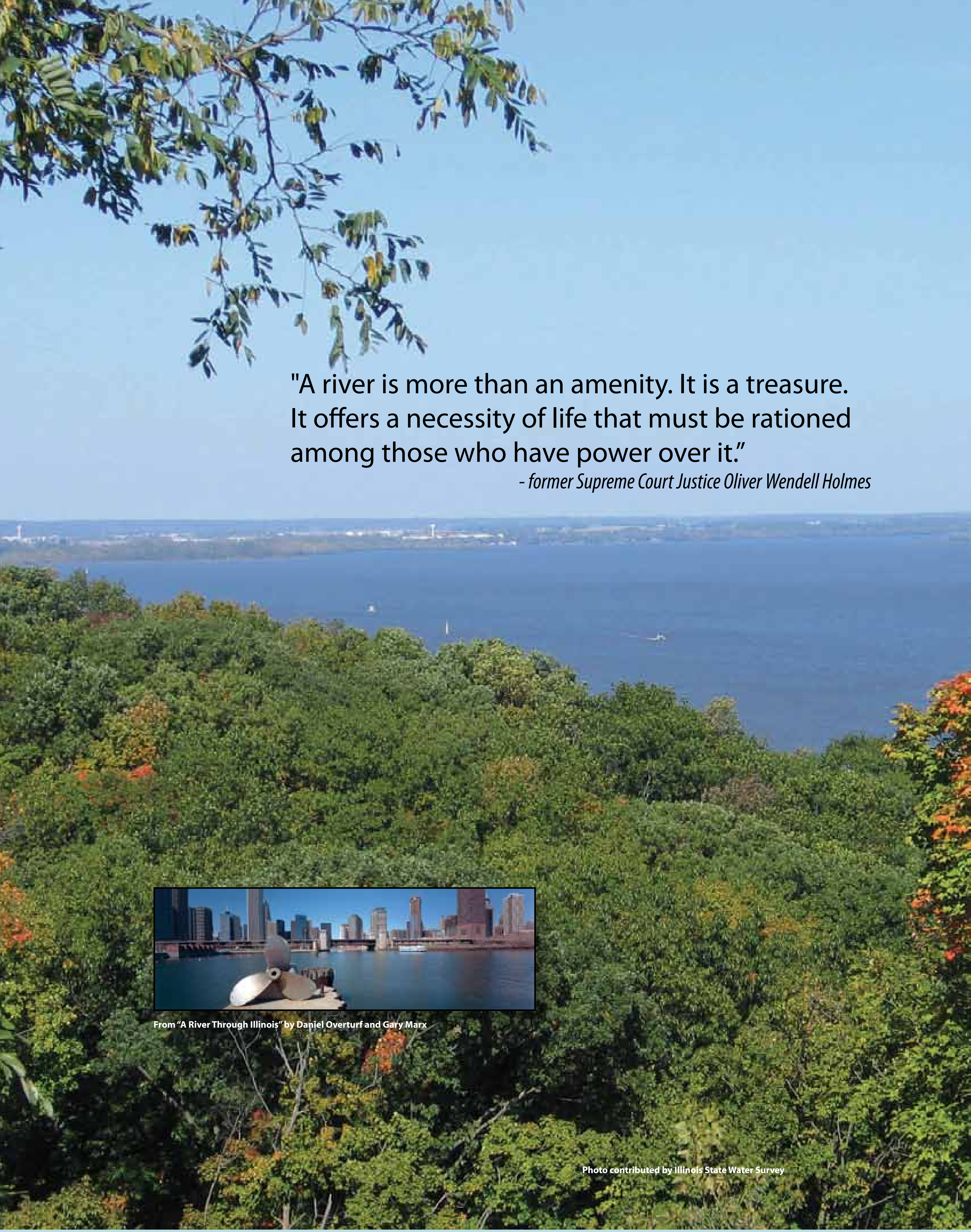
David Zalaznik (#1, #2, #3)
Peoria Journal Star (#4)
David King (#5)

Final revision 10/23/09

Table of Contents

Note: The contents in this document refer to past and current projects. As partnerships continue their work, this document may be updated in the future.

From "A River Through Illinois" by Daniel Overturf and Gary Marx



"A river is more than an amenity. It is a treasure. It offers a necessity of life that must be rationed among those who have power over it."

- former Supreme Court Justice Oliver Wendell Holmes

From "A River Through Illinois" by Daniel Overturf and Gary Marx

Photo contributed by Illinois State Water Survey

Introduction

The Illinois River and its watershed represent a complex system, an interrelationship of flora, fauna, people, places, agriculture and industry, recreation and commerce.

The year 2009 marks the twelfth biennial Governor's Conference on the Management of the Illinois River System. From the beginning in 1987, conference planners took a systems approach. The focus encompassed activities and issues on, in and around the river. This document is being issued in conjunction with this conference.

The water that flows through the Illinois River Watershed and down across the state carries a legacy throughout its journey. Upstream activities, all the way from the Atlantic Ocean through the Great Lakes, have downstream impacts to the Mississippi River and beyond to the Gulf of Mexico. Nonpoint source pollution, particularly the problem of sediment filling the river, argues for a comprehensive management approach that reaches well beyond the shorelines. Invasive species, whether zebra mussels or Asian carp, don't respect political boundaries.

Over the past twenty years, the conferences have brought together a wide range of water-related interests – people representing a variety of backgrounds, agencies and organizations at local, state and federal levels. Among the major, long-term benefits have been the partnerships that have developed to address priority projects, whether highly erodible sites, polluted places, degraded habitat or deteriorating infrastructure.

In 1997, the Integrated Management Plan for the Illinois River Watershed was developed and guided programs and activities that have been completed and planned. This document highlights some of the partnerships and projects that serve as models for the future. Changes continue to occur. The challenge in a dynamic system is to work together towards continuing improvement.

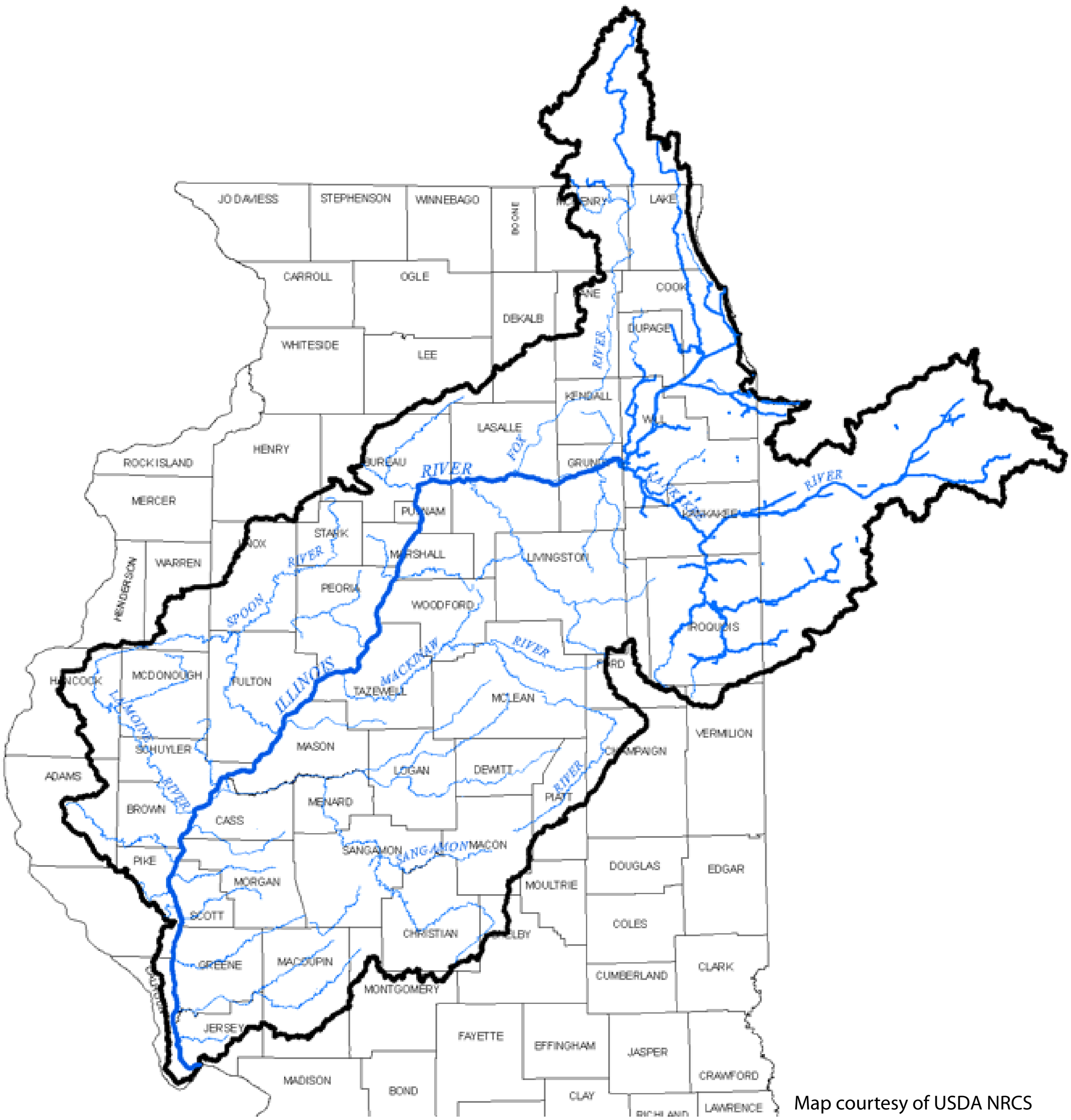
Photo contributed by Illinois State Water Survey

The Illinois River Watershed

A watershed is the area of land where all of the water that is under or drains off goes into the same place. John Wesley Powell (1834-1902), geologist, anthropologist and scientific explorer, put it well when he described a watershed as "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

Powell, whose family moved to Illinois in 1851, explored not only the Illinois River, but also the Mississippi, the Ohio and the Des Moines. After the Civil War, he taught at Illinois Wesleyan University and Illinois State Normal University prior to his famed exploration of the Colorado River.

The Illinois River Watershed covers 18,500,000 acres, mostly in Illinois, but also reaches into Indiana and Wisconsin. The dark line in the map below outlines the watershed. Nearly 95 percent of the urban areas of Illinois lie in this watershed, as well as 46 percent of the state's agricultural land, 28 percent of its forests, and 37 percent of its surface waters and streams. The blue lines represent the creeks, streams and rivers that flow into the Illinois River as they drain the watershed. Throughout this document, we will highlight just a few activities taking place in the river, along the river, and beyond the river. All these activities have an effect on the health of the watershed and our lives.



Map courtesy of USDA NRCS

Overview

Over time we have learned how our activities throughout the watershed have affected the health of its land, water, wildlife, and people. It's in everyone's best interest to help in any way possible: from recycling to reduced water consumption, from proper farming techniques to lawn care, from reduced energy consumption to proper operation and maintenance of vehicles and boats. We must handle hazardous chemicals through specified locations for proper disposal. If each individual and company would adopt simple river friendly practices, the Illinois River Watershed can remain the jewel of Illinois.

This document contains stories of the current efforts as well as plans for continuing commitment of partners working to protect the Illinois River Watershed. In 1997, the Integrated Management Plan for the Illinois River Watershed of the Illinois River Watershed was developed and has guided these efforts. The partnership stories reflect only some of the efforts happening in the watershed today.

From "A River Through Illinois" by Daniel Overturf and Gary Marx

A Little History

Since 1872, the river has been manipulated to accommodate a growing human population. In 1899, a commercial fish harvest was 241,000 pounds of channel catfish: by 1964 only 94,000 pounds could be caught. A river once home for 49 different aquatic species was reduced to 24 by 1969. Levees and drainage districts removed half the floodplains. In 1944, biologist Frank Bellrose recorded more than 3.6 million mallards during their fall migration. By the 1950's, the duck population had decreased by 90 percent.

In 1900, in order to divert untreated waste water from Lake Michigan, Chicago began sending it down the Illinois River. Serious environmental problems soon resulted. Many native aquatic species have disappeared. More recently, invasive species, such as the zebra mussel, have made their way down the river, while Asian carp have moved in from the south.

Water quality was degrading as silt and other pollutants filled the river channels and backwaters. The increased run-off from urban and agricultural areas entered the river when the floodplains were leveed, creeks channelized and wetlands filled. Locks and dams installed to maintain depth led to increases in barge frequency and larger ships. To maintain the multi-million-dollar commercial industry that travels the Illinois River, expensive dredging was regularly needed. As aquatic and wildlife habitats dwindled, so did tourism and recreational activities.

Data excerpts from *The Illinois Steward, 2002*

From "A River Through Illinois" by Daniel Overturf and Gary Marx

From "Life Along the Illinois River", David Zalaznik

Recreation

The Illinois River has many recreational areas for visitors who enjoy the river's multitude of outdoor fun and adventures.

From "Life Along the Illinois River", David Zalaznik

Climbers in Starved Rock State Park

From "Life Along the Illinois River", David Zalaznik

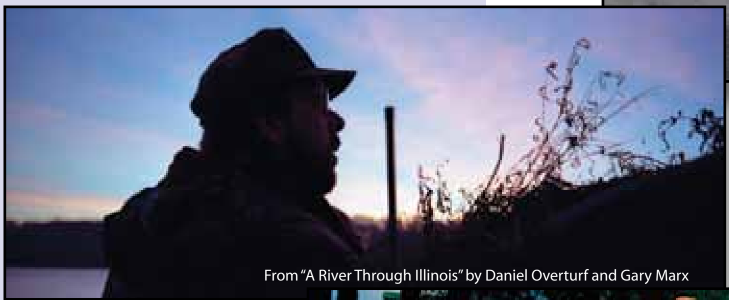
Kayaking the icy Illinois River

From "Life Along the Illinois River", David Zalaznik

Hunting Asian carp

Photo contributed by Illinois State Water Survey

Boaters in Peoria



From "A River Through Illinois" by Daniel Overturf and Gary Marx

Brent Millinger hunting at Sawmill Lake

From "A River Through Illinois" by Daniel Overturf and Gary Marx

Hughes and Rounds fishing in I&M Canal, Morris

The River

The river has been the lifeline for people and wildlife over thousands of years. Once part of the ancient Mississippi, the Illinois River has been called the highway through Illinois. Agriculture, commercial shippers and others use and rely on the river to haul goods from Lake Michigan to the Mississippi, and from there to the world. To keep this highway open and functioning properly, river management requires understanding and cooperation. Partnerships are essential.

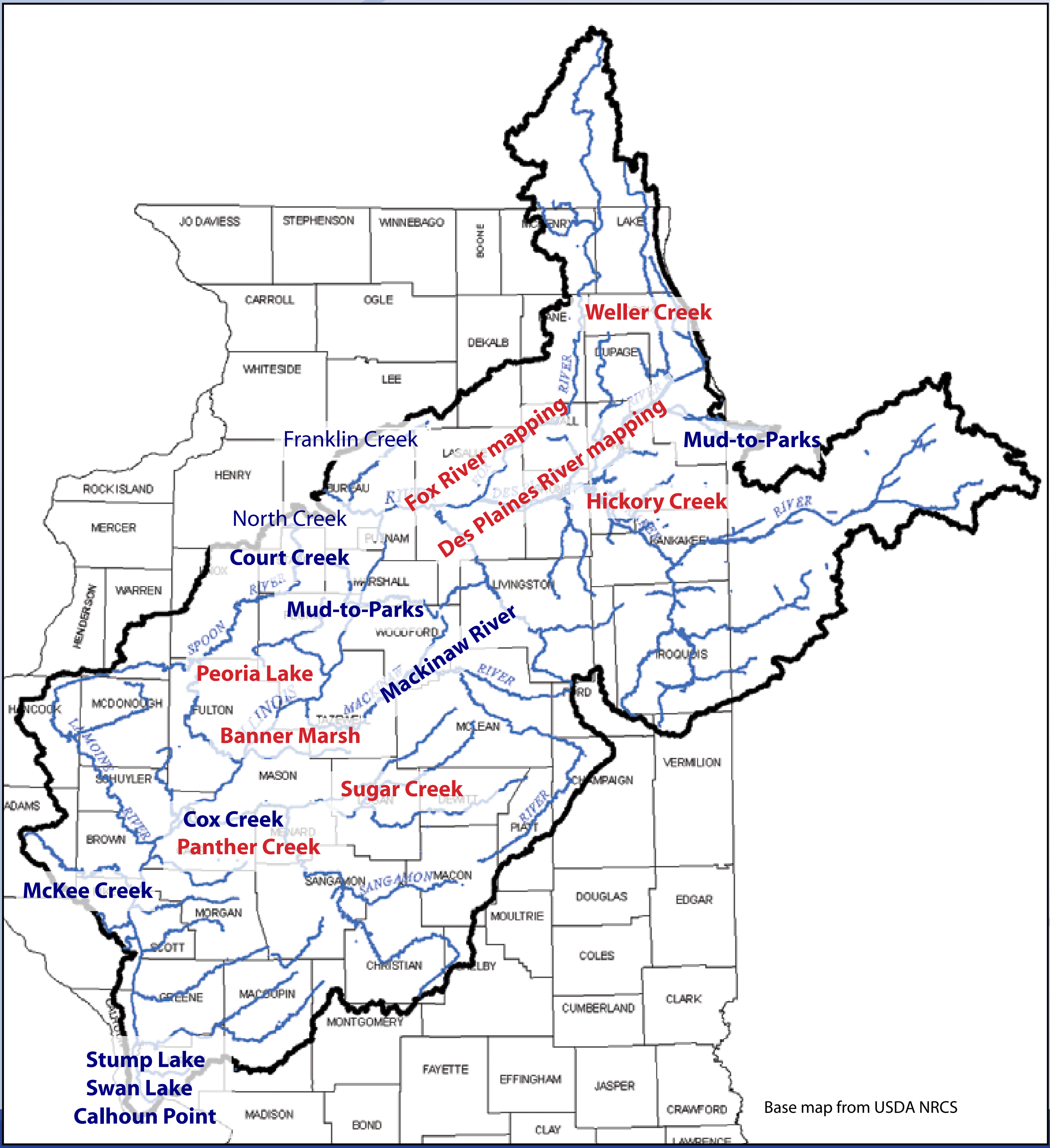
A number of studies and reports monitor and guide the changes. Watershed groups have gathered to design plans and implement actions. The funding as well as technical and scientific assistance comes from many sources.

From "Life Along the Illinois River", David Zalaznik

From "Life Along the Illinois River", David Zalaznik

The watershed map below shows general locations of projects highlighted in this chapter along with a few other notable projects.

Projects highlighted in this chapter
Other projects



Base map from USDA NRCS

The River Stories

Soil Finds New Home

The sediment filling the Illinois River from the bottom up constitutes a misplaced resource. Finding a new home for the dredged soil has led to some creative solutions, facilitated by the Illinois River Coordinating Council.

Mud-to-Parks, the name given to an initiative that moved dredged mud to create shoreline parks at former industrial sites, is among the better known projects. More recently, construction of an island has begun in lower Peoria Lake, just south of the narrows. Island construction opposite Chillicothe created deep-water habitat for fish as well as nesting sites for birds and also opened clogged backwater channels.

Two barge loads of river mud moved down river to a strip-mined area at the Banner Marsh State Fish and Wildlife Area. Healthy stands of sunflowers and other crops now grow there. The Pekin landfill in Tazewell County received topsoil for final vegetative cover as part of another project.

Another Mud-to-Park project, Riverfront Park in East Peoria on the site of a former electrical power generating plant, now hosts various festivals and a veterans memorial. The former US Steel South Works site in Chicago, now covered by 100,000 tons of river mud from East Peoria, has been created into a lakefront park. The sediment dried rapidly and was vegetated within six weeks.

None of this reuse would have proceeded without the studies by the Illinois scientific surveys. They first collected and processed dozens of core samples from the river and its backwaters. The sediment was characterized by physical properties and analyzed for potential contaminants. Numerous greenhouse and field experiments verified that the sediment developed good soil structure and was highly fertile when placed in the field and did not contain excessive amounts of metals. Corn and soybeans thrived in sandy soil test plots amended with sediment and corn had significantly higher yields. In other field plots grasses, prairie plants, sunflowers, volunteer weeds and trees also grew well. The University of Illinois soils pedology laboratory determined its fertility and overall potential for use as a productive growing medium.

Several techniques for dredging the mud and either moving it directly to shore or onto barges for transport have proven useful. The results of this work will also be helpful to communities with sediment filled water supply reservoirs.

Loading barge on Lower Peoria Lake with sediment excavated with a clamshell bucket designed to minimize the amount of water placed in the barge.

Inspecting mud drying on the field in Chicago.

Sediment that the day before was on the bottom of the lake is placed on the clay liner of the Pekin Landfill to provide soil for final vegetative cover.

Illinois Natural History Survey researcher identifying volunteer plants growing in sediment three months after placement.

Photos contributed by Illinois Sustainable Technology Center

Many Projects Combined to Support River Function

Calhoun Point and Swan Lake, both in Calhoun County, and Stump Lake in Jersey County are just a few projects with major construction completed between 1999 and 2006. These projects became possible through cost share monies contributed by the federal government and other sources

Calhoun Point is a prime site for migrating waterfowl and a prime feeding area for herons. The project has rehabilitated and enhanced wetland and aquatic habitats to provide breeding, nesting and feeding habitats for various waterfowl and other wildlife species, and furnished productive spawning and nursery areas for riverine fishes. The project included the creation of four independent fish and/or wildlife management units. Water level management is the key to success for this project. This project included dredging to facilitate water movement and to create deep water areas. Installing a combination of low elevation levees and connecting ditches between the units and gated water control structures will hold and release water as needed.

Historically, Swan Lake contained large amounts of backwater habitat for spawning, rearing and wintering fish as well as migratory bird resting and feeding areas. River and hillside sedimentation, wave action erosion, and water level fluctuation was reducing backwater habitat quality and quantity. The project restored aquatic plants and invertebrates and provided habitat for fish spawning, rearing and overwintering by reducing sedimentation, stabilizing water levels, reducing wave action, and creating deep water. The project included dredging to create deep water and islands, a riverside sediment deflection levee, hillside sediment control basins and water control structures.

Stump Lake has suffered from sedimentation and a lack of stable water levels. This combination had decreased aquatic plant production. The project deflects sediment away from the lake to create deep water areas and improved water control that has restored fish access and habitat for spawning and rearing. It also improved moist soil plant production. The project included a sediment deflection levee, seven interior levees, sluice gates and stop log structures and dredging.

Partners include Illinois Department of Natural Resources, St. Louis District Army Corps of Engineers, US Fish and Wildlife Service and USDA Natural Resources Conservation Service.

Mapping Activities of the Illinois River Watershed

The Illinois State Geological Survey (ISGS) has several activities that support the efforts within the Illinois River Watershed. Their involvement ranges from mapping geographical locations for soil and water erosion activities to developing monitoring protocols for ecosystem restoration practices.

They have developed materials in support of the restoration projects such as the Critical Trends Assessment Program Regional Watershed Assessments. Throughout the history of the Critical Trends Assessment Program, the ISGS has produced technical volumes on the geology of each assessment area. These technical volumes provide small-scale maps, tables of data, and additional sources of information about the basic composition of the bedrock, the uncompacted glacial materials, the soils, topography, mineral and groundwater resources, and interpretative information about the effects of geology on the environment in each assessment area.

These materials have been used by many local watershed planning groups as the foundation of their watershed plan.

Mackinaw River and Water Quality

From 1991 to the present, the Illinois Chapter of the Nature Conservancy in partnership with other agencies, organizations and individuals, conducted a series of studies, surveys and outreach meetings. The goal was to research how conservation practices have contributed to improving water quality in the Mackinaw River Watershed, a subwatershed of the Illinois River Watershed. The area is 70 percent agricultural land and contains 23 percent of the highest quality streams in Illinois.

Activities include:

- Determining effects of outreach on the awareness and adoption of conservation practices by farmers
- Evaluating agricultural conservation practices in Illinois, including the benefits, if any, of stream buffers and grassed waterways
- Studying aquatic biodiversity in two agriculturally-dominated smaller watersheds of central Illinois
- Establishing a demonstration farm for promotion of agricultural conservation through outreach and wetland research
- Comparing effects of subirrigation-wetland systems and constructed wetlands on water quality on a watershed scale
- Testing a hydrologic watershed model
- Measuring nitrogen pathways through constructed wetlands
- Developing stakeholder outreach teams

Benefits of these particular studies are to achieve long-term conservation goals in agricultural landscapes, and to understand farmers' perspectives on what practices are effective, practical, and economically attainable. Data from these surveys will provide biological assessments of two watersheds within the Mackinaw River that can be incorporated with previous research findings to:

(a) identify biotic indices that are most useful at assessing agricultural impacts on biodiversity,
(b) identify effective conservation strategies, and
(c) measure the effectiveness of conservation practices addressing these impacts.

The Demonstration Farm provides an opportunity for farmers to see how these practices work on agricultural lands and a forum to inquire about economic and practical aspects of these practices. One project has served as an important step towards implementing and measuring watershed-scale effectiveness of wetlands for reducing contaminants from agricultural runoff from subsurface tiles. The results of the research is expected to lead to a better understanding of the operation and maintenance requirements of constructed wetlands that will provide for maximum effectiveness at removing nutrient runoff from subsurface drainage.

The Mackinaw River Watershed Plan, developed by a local watershed planning committee, identified the need to implement 29,000 acres of wetlands in the Mackinaw River Watershed.

Collaborators and partners

- The Nature Conservancy, Illinois Chapter
- USDA Natural Resources Conservation Service
- McLean County Soil and Water Conservation District
- Illinois State University
- University of Illinois at Urbana-Champaign
- Southern Illinois University
- Illinois Natural History Survey
- Illinois State Water Survey
- AGREM LLC
- Illinois Department of Natural Resources
- Mackinaw River Partnership
- Participating landowners

Current and past funding

- Kellogg Family Foundation
- US Environmental Protection Agency
- USDA Natural Resources Conservation Service (Conservation Innovation Grants Program)
- Illinois Department of Natural Resources (Conservation 2000 Ecosystem Program)
- Ducks Unlimited
- McLean County Soil and Water Conservation District
- Pioneer- DuPont
- Monsanto
- The Nature Conservancy

Studies and Project Implementation Within the Illinois River Watershed

Several studies have been and continue to be conducted within the watershed to see what effects human and natural activities have on the water and habitat quality. The Illinois State Water Survey, Illinois Department of Natural Resources, US Geological Survey and the USDA Natural Resources Conservation Service have partnered to conduct surveys and install practices to address issues with water quality.


Riffle 14 on North Creek

Survey projects are located on North Creek and Court Creek in Knox County; Cox Creek in Cass County; Franklin Creek in Lee County; and Crabapple Lake Creek, a branch of McKee Creek, in Adams County. Results include riffles and pools to control water flow and reduce erosion on streambanks and to improve aquatic habitats and water quality. These projects were completed between 1991 and 2003.

North Creek, Knox County: Completed in 2001 and 2003


Riffle 5 on Upper North Creek

The project included a series of fourteen riffles (a series of rocks lined across a stream to stabilize the sides and bottom of the channel) applied throughout roughly 11,000 feet of stream in 2001. Two years later, a series of five riffles was applied on an additional 3,000 feet of eroding stream. The total cost of the project was $175,000.

The project applied artificial riffle structures as grade control to slow the channel-cutting process and create pools to help dissipate energy in an effort to reduce erosion and sediment production and to enhance habitat conditions by providing greater pool depth and aeration.

Photos contributed by Illinois State Water Survey

Additional Activities

Illinois Environmental Protection Agency

Illinois Environmental Protection Agency is required by the Federal Clean Water Act to monitor and assess Illinois' water resources. Illinois Environmental Protection Agency and the Illinois Department of Natural Resources collect the following data in the Illinois River Watershed: water chemistry, sediment chemistry, fish contaminants, fish community, macroinvertebrates, phytoplankton, habitat and visual observations. The data is used to determine if the water bodies maintain their designated uses in terms of support (Good), partial support (Fair) or non support (Poor). As reported by the Illinois Environmental Protection Agency in the 2008 Integrated Report, of the *stream miles assessed* in the Illinois River Watershed for Aquatic Life Use Support attainment, 64.6 percent were reported as "Good," 30.4 percent as "Fair," and 5.0 percent as "Poor." This compares to statewide figures of 61.1 percent "Good," 34.8 percent "Fair," and 4.1 percent "Poor."

In Illinois, the most common causes of impairments are found to be nutrients, habitat alterations, organic enrichment/dissolved oxygen (the amount of oxygen dissolved in a body of water as an indication of the degree of health of the water and its ability to support a balanced aquatic ecosystem) depletions, siltation and suspended solids. The most common sources of impairment (in alphabetical order) are found to be agriculture, hydromodifications, point sources, resource extraction and urban runoff. There are eight Ambient Water Quality Monitoring Sites on the main channel of the Illinois River. Water chemistry is collected 9 times a year. There are also approximately 250 Intensive Basin Survey Sites within the Illinois River Watershed. These sites are monitored once every five years. Water chemistry is collected 3 times a year while bugs, fish, habitat, sediment and chemistry are collected once. Fish contaminates are monitored at some sites. For more information visit http://www.epa.state.il.us/water/

US Army Corps of Engineers, Rock Island District and the Illinois Department of Natural Resources

Illinois River Basin Restoration Comprehensive Plan - The US Army Corps of Engineers, Rock Island District, and the Illinois Department of Natural Resources entered into a cost-share agreement in August 2000 and, with other agencies, identified opportunities for ecosystem restoration in the Illinois River Watershed. The Comprehensive Plan provides the overall plan for the restoration of the Illinois River Watershed, including system needs and recommendations describing the restoration program, long-term resource monitoring, computerized inventory and analysis system, and innovative dredging technologies and beneficial use of dredged material. To learn about this project and more, go to http://www.mvs.usace.army.mil/

Along The River

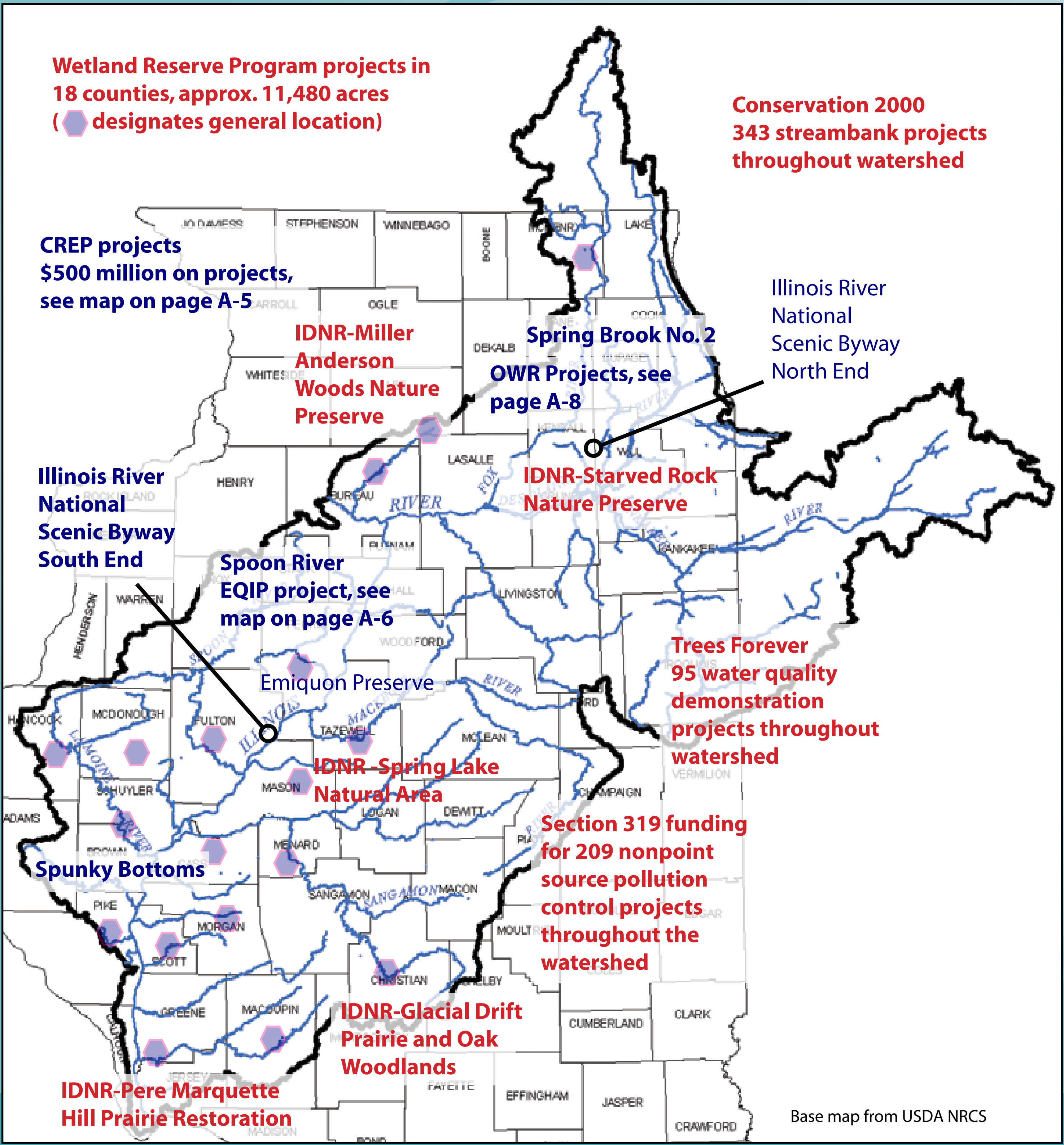
Communities rely on the river for their drinking water. With sediment and pollutants flowing into the river, strategies were designed to locate the sources and find solutions to prevent this from continuing. Wetlands and floodplains were restored, tributary streams were stabilized to prevent bank erosion, and counties and municipalities passed laws to require proper erosion control protection during construction and development.

Photo courtesy of USDA NRCS

From "A River Through Illinois" by Daniel Overturf and Gary Marx

The watershed map below shows general locations of projects highlighted in this chapter along with a few other notable projects.

Projects highlighted in this chapter Other projects



Base map from USDA NRCS

Partnerships Creating Positive Results

Controlling erosion – keeping the soil on the land – provides the key to keeping sediment from filling the backwaters and mainstream of the Illinois River.

Eight federal and state agencies and 45 Soil and Water Conservation Districts across the Illinois River Watershed are cooperating in efforts that have focused more than $500 million for restoring more than 232,000 acres of floodplain, wetlands, and adjacent erodible land in the Illinois River Watershed.

Known as the Conservation Reserve Enhancement Program or CREP, the state-federal partnership was established in 1998 between the US Department of Agriculture, Commodity Credit Corporation and the State of Illinois.

To date, 1,288 landowners have enrolled approximately 82,000 acres into long-term state conservation easements. Over 90 percent of state-enrolled acres are in permanent easements which means they will remain as floodplains or wetlands.

From 1998 until 2008, more than 127,000 acres of floodplain and other environmentally sensitive lands have been enrolled in the federal side of CREP and restored to native vegetation. Approximately one-third were restored to wetlands. Every state dollar invested brought nearly five federal dollars in match for local landowner benefit.

CREP addresses high priority issues such as water quality and loss of critical habitat for threatened and endangered species and species in greatest need of conservation, as identified in the Illinois Fish and Wildlife Action Plan.

Partners include the USDA Farm Service Agency, USDA Natural Resources Conservation Service, Illinois Department of Natural Resources, Illinois Department of Agriculture, Illinois Environmental Protection Agency, Association of Illinois Soil and Water Conservation Districts, Illinois Soil and Water Conservation District Employee Association, and University of Illinois Extension. Illinois Department of Natural Resources has an Intergovernmental Contract Agreement with 45 Soil and Water Conservation Districts for program implementation. A CREP Advisory Committee provides guidance on program implementation.

Macon County Farmer Finds Partners and Solutions with EQIP

Ron and Jean Helm of Macon County own and operate 137 sloping and wooded acres that support a rotation of corn and soybeans and a small livestock operation; agricultural land that's been in his wife's family for more than 100 years and located on tributary of the Sangamon River. It started out as a hobby farm that was labor intensive and barely sustainable and has now become a full-time job.

Over the past few years, Ron read and learned how to farm and how to do it right. He's learned about organic farming. He inventoried his land, what it needed, and what his cattle needed. He considered different possibilities for water sources for his cattle and different scenarios for addressing resource issues on the farm.

Ron applied for the USDA Natural Resources Conservation Service's Environmental Quality Incentives Program (EQIP) and has nearly completed the installation of all items in his 5 year contract. He has installed a number of soil and water improvement practices that help his land, his livestock, and the state of natural resources within the watershed. He re-graded some areas of steeper slopes, added erosion control structures, tiled some areas, installed a rock check dam and berms to better direct and store water. He created two water and sediment control basins, established a perimeter fence around the pastured areas, a high usage pad for cattle, protected a streambed crossing with rock, and cleared out overgrowth in some wooded areas that needed attention.

Ron's new conservation additions join some historic ones established back in the 1930's through the Works Progress Administration projects created by President Franklin D. Roosevelt. Terraces were installed 60 years ago to keep sediment out of the creek. Those terraces are still working today. The acres are comprised of a diverse environment—flat ground, rolling hills, trees, and creeks. He believes this land was made for grazing cows and is just trying to make it better, keep it productive, and protect it.

A new perimeter fence was installed so Ron will be able to let his cows out to graze the corn residue while he gets busy planting clover and wheat as part of his new rotation. What Ron is doing is getting back to basics, managing his land and his livestock in a logical and cost effective way just like they did in the good old days. "I'm working and managing this farm by doing what is right and what is healthy for everybody," says Ron.

Partners include USDA Natural Resources Conservation Service and Macon County Soil and Water Conservation District.

Floodplains Gain Ground

In 1998, working with about 40 partners and funding from the Grand Victoria Foundation, the Illinois Chapter of The Nature Conservancy completed a plan for conserving the biological diversity of the Illinois River Watershed. That plan provided direction for all the Conservancy's efforts in the Illinois River Watershed including floodplain restorations at Spunky Bottoms Preserve in Brown County and Emiquon Preserve in Fulton County.

Spunky Bottoms Preserve

Restoration of approximately 1,200 acres of former floodplain began on Conservancy lands. Later the Illinois Department of Natural Resources acquired an additional 833 adjacent acres. Completion of restoration is being planned with the US Army Corps of Engineers through their Section 1135 program. Additional funds will restore and enhance forest, prairie, and wetland habitats. The project will provide passage for aquatic organisms between restored habitats and the river, and an emergency spillway to reduce damages from extreme flood events.

Spunky Bottoms
Funding: North American Wetlands Conservation Act, National Fish and Wildlife Foundation, Wetland Conservation Act conservation easement, the Open Lands Trust Partnership, and additional private and foundation gifts.

Partners: The Nature Conservancy, Illinois Department of Natural Resources, US Army Corps of Engineers, USDA Natural Resources Conservation Service, Illinois Natural History Survey and The Wetlands Initiative.

Emiquon Preserve

This restoration project involves approximately 6,500 acres of former floodplain, transition lands, and bluff. Completion of restoration is being planned with the US Army Corps of Engineers through their Section 206 Aquatic Ecosystem Restoration Program. Features being considered include: an emergency spillway to reduce flood damages during extreme flood events; islands to reduce wind action and promote beds of diverse aquatic plants; and a connection with the river to provide for water level management and movement of aquatic organisms between restored habitats and the Illinois River.

Project benefits include additional and enhanced habitats for fish as well as for both resident and migratory wildlife; increased primary and secondary productivity and transport to the river ecosystem; and carbon sequestration. Contributions to improved water quality will be reached through more natural river hydrology, reduced flood damages, improved sediment and nutrient management. These projects also provide excellent opportunities for recreation, education and compatible economic development.

Emiquon Preserve
Funding: Wetland Reserve Program conservation easement to the USDA Natural Resources Conservation Service and additional private and foundation gifts.

Partners: The Nature Conservancy, USDA Natural Resources Conservation Service, US Fish and Wildlife Service, Illinois Department of Natural Resources, University of Illinois at Springfield, Dickson Mounds Museum, Illinois Natural History Survey and numerous private donors and foundations.

Aerial view near Havana, Illinois

From "A River Through Illinois" by Daniel Overturf and Gary Marx

Emiquon Preserve before (left) and after (right) restoration.

Same highway bend

Photo contributed by Chris Young

Restoring A Stream to Protect the River

The Springbrook Prairie Forest Preserve in Naperville has the most biologically diverse stream flowing through DuPage County - Spring Brook No. 2 - yet pollution in the form of heavy sediment was evident in many parts of the stream. Studies indicated that much of this sediment came from the streambanks during high flow events. To solve this problem, the Forest Preserve District of DuPage County initiated the Springbrook Meander Project that would create a meandering stream channel that better connects to its floodplain. The project restored two miles of the stream to more natural conditions of meanders, riffles, pools, and riparian wetlands. By managing floodwaters and reducing erosive energy, streambank stability is improved.

The stream channel design incorporated improved fish, mussel and aquatic invertebrate habitats. It created a more natural stream habitat and riparian wetlands.

This project is somewhat different from many stream restoration projects. Instead of protecting the streambanks with traditional materials, the District created a new channel designed to minimize sedimentation and erosion. By installing meanders, the stream has become longer and the channel grade flatter. This combination is designed to reduce the erosive energy of the water and should allow the stream to maintain itself much longer than if it remained channelized.

The project saved money by using the rootwads of trees removed during construction to help stabilize the banks until permanent vegetation is established. It also incorporated riffles that extended farther into the floodplain, so that the stream could move but still remain stable.

Most of the old channel was filled to form a part of the floodplain excavation. However, the project design allowed for seven areas of the old channel to remain as wetlands in the floodplain but isolated from the newly meandering channel. The off-channel wetlands should be ideal breeding areas for amphibians such as frogs and toads. The stream will be allowed to move across the flood plain but should always maintain an appropriate entrenchment ratio, staying connected to the flood plain as conditions within the watershed change over time.

Funding - The $3,428,800 project included a $1,150,000 contribution from Section 319 of the Clean Water Act available through the Illinois Environmental Protection Agency, with additional funding from Illinois Department of Natural Resources through the C2000 Program.

Partners
Illinois Environmental Protection Agency
Illinois Department of Natural Resources
DuPage County Department of Economic Development and Planning
US Environmental Protection Agency

Photos courtesy of Forest Preserve District of DuPage County

Spoon River Project - EQIP Special Project

In 2006 and 2007, USDA Natural Resources Conservation Service enrolled 53 streambank projects under the Environmental Quality Incentives Program (EQIP) Spoon River Initiative. USDA Natural Resources Conservation Service committed a total of $1.5 million of EQIP funds to the project which offered financial and technical help and provided incentive payments and cost-shares to implement the streambank stabilization practices. The Illinois Department of Natural Resources provided $650,000 in matching cost-share funds.

Photo courtesy of USDA NRCS

Rock was placed along streams in the Spoon River Watershed to stabilize the backs from eroding.

Additional Activities

Illinois River National Scenic Byway - Designation of the Illinois River Road (on the east and west sides of the Illinois River from Ottawa to Havana) as a National Scenic Byway by the US Department of Transportation Federal Highway Administration was completed in 1997. The Illinois River Road National Scenic Byway will attract visitors to our region, create a sense of pride in the region's residents and create a higher quality of life for those who live and work here by stimulating visitor-based economic development. To find out more, visit their web site at http://www.illinoisriverroad.org/

Illinois Department of Agriculture (C2000 Streambank Stabilization and Restoration Program) - The agency cost-shared $2,676,721 on 343 streambank stabilization projects using vegetative plantings, bendway weirs, rock riffles and pool systems. To learn more, go to http://www.agr.state.il.us/

Illinois Environmental Protection Agency (Section 319 Program) - Since 1990, the Illinois EPA has dedicated more than $45 million of Clean Water Act Section 319 funding for 209 nonpoint source pollution control projects in the Illinois River Watershed. Projects include streambank and shoreline stabilization and stream channel stabilization; nutrient management; wetland restoration; green roofs; porous pavement; and many more. Practices implemented since 1990 have reduced the pollutant load to the Illinois River by significant rates. To learn more, go to http://www.epa.state.il.us/

Illinois Department of Natural Resources, Office of Water Resources – Among several activities throughout the watershed, the Office of Water Resources, through an agreement with the Chicago District US Army Corps of Engineers, has provided $1.8 million dollars toward the implementation of an electric barrier across the Chicago Sanitary and Ship Canal in Romeoville, Illinois to reduce the risk of aquatic nuisance species between the Mississippi River and the Great Lakes along the Illinois River and its tributaries. Another activity, the Glen D. Palmer Dam Modification and Natural Bypass Channel Project constructed by the Office of Water Resources on the Fox River in Yorkville, is a good example of a multi-purpose project that provides public safety improvements at an existing run-of-river dam in addition to fish passage structures and the construction of a recreational white water boating course for both novice and intermediate skilled paddlers. For these projects and more, go to http://dnr.state.il.us/OWR/

Trees Forever - From 2001-present, Trees Forever's Illinois Buffer Partnership has 95 water quality demonstration projects within the Illinois River Watershed. The Illinois Buffer Partnership program improves water quality by establishing buffers of trees, shrubs, and grasses, wetlands, and other best management practices. For more information ,go to http://www.treesforever.org/Content/Get-Involved/ Programs/Illinois-Buffer-Partnership.aspx

Beyond The River

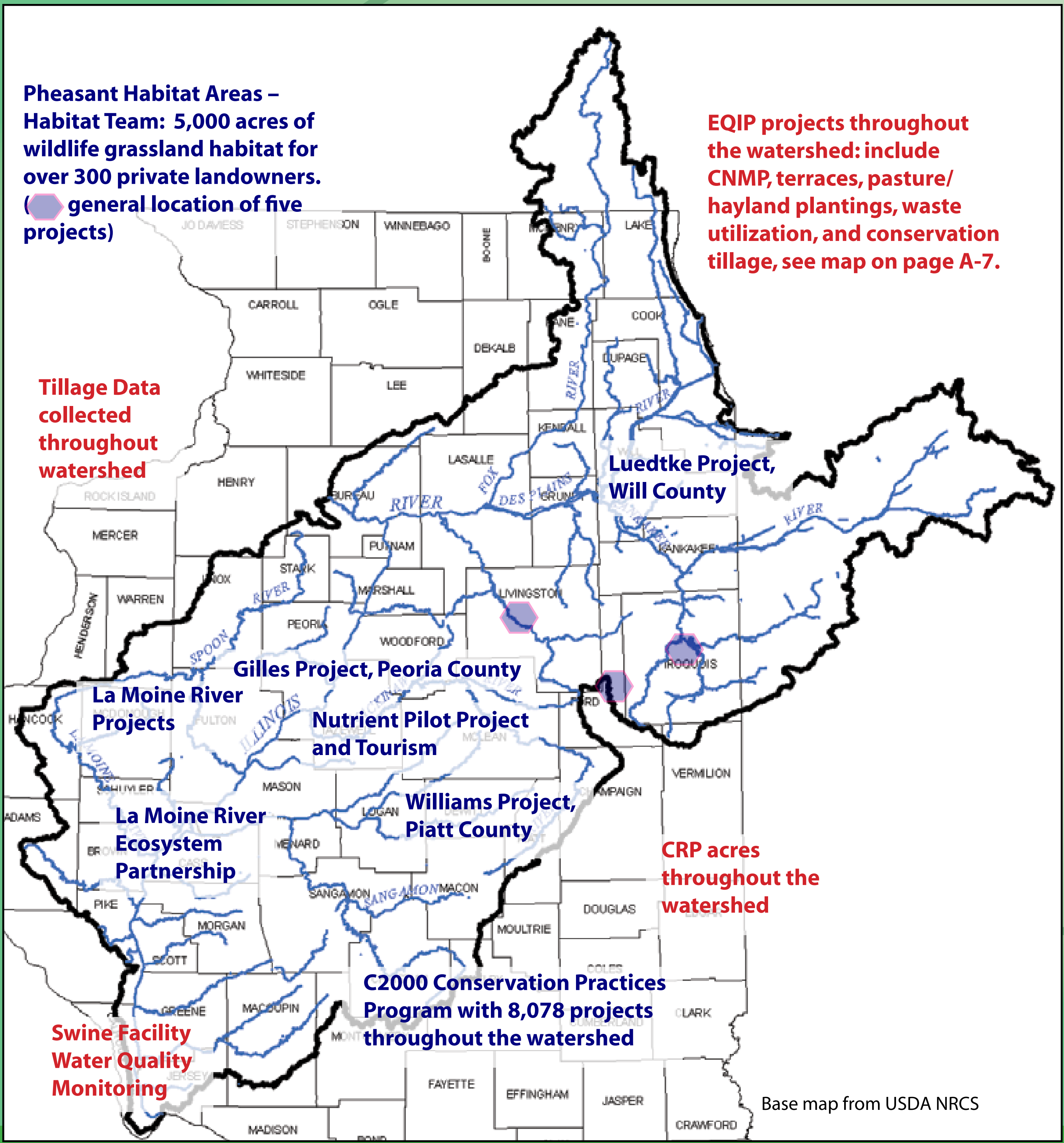
The Illinois River Watershed drains 18,500,000 acres of land, about half the state. Far from the Illinois River, farmsteads and small rural communities still have an effect on the river conditions. Taking steps to protect their land and resources helps not just the farming operation but protects the water quality of the river. Maintaining wooded areas and grasslands keeps the soil in place, retains the nutrients and prevents pesticides from entering water sources.

Photo courtesy of USDA NRCS

From "Life Along the Illinois River", David Zalaznik

The watershed map below shows general locations of projects highlighted in this chapter along with a few other notable projects.

Projects highlighted in this chapter
Other projects



Local Councils Help Improve Water Quality and Tourism

Three Resource Conservation and Development (RC&D) Councils have many activities between them that have positive impacts on the Illinois River Watershed. RC&D is a program administered by the USDA Natural Resources Conservation Service. RC&D is a unique program that is led by local volunteers brought together to plan and carry out activities that will make their area a better place to live. Such activities lead to sustainable communities, prudent land use and the sound management and conservation of natural resources. Three RC&D councils are located in the Illinois River Watershed:

– Prairie Hills RC&D
– Prairie Rivers RC&D
– Two Rivers RC&D

The following are just a few activities taking place within the councils.

Pasture plantings in clover-grass

Creek fenced to keep cattle out

Photos contributed by David King, Prairie Hills RC&D

La Moine River Livestock Exclusion Project, – Prairie Hills RC&D

A $250,000 grant funded by the Illinois Environmental Protection Agency to Prairie Hills Resource Conservation and Development to cost-share with livestock producers to reduce sediment, phosphorus, and nitrogen from entering into the La Moine River. The La Moine River is a tributary to the Illinois River. Practices landowners installed include cattle crossings, fencing to exclude livestock from entering the river, pasture paddocks for rotational grazing, streambank stabilization, pasture planting and improvement practices, livestock watering facilities, and natural area plantings.

There are currently seven livestock producers participating. Three livestock producers have completed their projects and four projects are in progress with some practices completed and others to be completed. The Exclusion Project began in October 2007 with some practices completed and others to be completed.

La Moine River Ecosystem Partnership, - Prairie Hills and Two Rivers RC&D

Progress on the watershed plan for the La Moine River continues with the La Moine River Ecosystem Partnership. This partnership includes parts of Adams, Brown, Schuyler, Fulton, McDonough and Hancock counties. The Board ranked five grant applications for the 2006 C2000 grant program through Illinois Department of Natural Resources. A grant from Illinois Environmental Protection Agency is helping pay for inventories and public meetings within the watershed. Conservation practice data has been digitized and the Technical Advisory Committee (TAC) is meeting to develop recommendations. A newsletter to inform landowners and invite them to participate in existing conservation programs has been distributed.

Tourism Promotion - Prairie Rivers RC&D

The Illinois River Road National Scenic Byway consists of 291 miles, embracing both sides of the Illinois River in central Illinois. The Prairie Rivers RC&D projects include an Interpretive Master Plan with interpretive displays/kiosks; directional and way-finding signage; a web site; a comprehensive map and audio tour of the Byway and nature sites. This Scenic Byway secured $253,000 in funding through US Department of Transportation and $20,000 from the Illinois Bureau of Tourism to support these efforts.

Good Stewards of Urban Lands

DuPage County is home to a variety of progressive urban best management practices and programs. With organizations like The Conservation Foundation, Morton Arboretum, the DuPage River Salt Fork Workgroup and the Kane-DuPage Soil & Water Conservation District it seems there's conservation work around every corner. It's a good thing too, because the county drains not only to the DuPage River, but also to the Fox and Des Plaines Rivers. All of these rivers drain to the Illinois River.

DuPage River Salt Creek Workgroup

Traditional watershed planning efforts in Illinois may include a municipal representative or two, but not many more. In DuPage County, the tables are turned; the DuPage River Salt Creek Workgroup (Workgroup) is weighty with municipal representatives and water treatment facility staff. Watershed planning was already successful in the county, but local efforts increased in the form of the Workgroup which was started in response to the potential development of Total Maximum Daily Loads (TMDL) (a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards) on the Dupage River and Salt Creek. The members of the Workgroup have brought a wide range of knowledge and skills to the project. An intense dissolved oxygen monitoring effort (amount of oxygen dissolved in a body of water as an indication of the health of the water and its ability to support a balanced aquatic ecosystem) has been implemented along with a biological and habitat assessment, dissolved oxygen improvement feasibility study, chloride reduction study and nonpoint source pollution control strategy. The monitoring and resulting reports have documented opportunities throughout the watershed to improve local water quality. The Workgroup is currently working on the removal or modification of a dam to improve dissolved oxygen levels in the river.

Partners include The Conservation Foundation, most of the municipalities within the watershed, Illinois Environmental Protection Agency and DuPage County Department of Environment.

Morton Arboretum

The Morton Arboretum is located in unincorporated DuPage County. It has a long, proud history of preserving and enhancing the environment and in educating the general public about trees, shrubs, and other plantings. In the 1990s a new visitor center was proposed. A new 500 car parking facility would also need to be constructed to accommodate the ever increasing number of visitors, which posed a challenge. It would be situated between Meadow Lake and the East Branch of the DuPage River. The idea of constructing a 5-acre asphalt parking lot next to Meadow Lake, and in the floodplain of the East Branch of the DuPage River, did not seem to uphold the goals of local watershed planning efforts. Such a parking lot would produce a significant concentration of pollutants, which would immediately drain into Meadow Lake and subsequently the river. In addition, the asphalt parking lot would heat the water, thereby degrading the biodiversity and ecosystem in the downstream watercourses. Given these factors, the arboretum decided that a "green" parking lot would be the best solution to this problem.

The goals to reduce overall stormwater runoff and improve downstream water quality were achieved when the permeable pavement, bioswales, level spreaders, wetlands, vegetated channels, grass filter strips, and vortex-type oil traps were installed. This project produced a parking lot with the exact opposite effect of the standard asphalt parking lot, which typically increases stormwater runoff and degrades downstream water quality.

In addition to the parking lot, the arboretum has stabilized streambanks and lakeshore throughout their property. The arboretum staff have successfully used the projects to expand their outreach efforts even farther into the field of conservation.

Partners include Morton Arboretum and Illinois Environmental Protection Agency.

Permeable pavers and bioswale with curbcuts

Morton Arboretum parking lot in use… notice holes in pavement to allow rainwater and snow to filter into the gravel base instead of running off into the lake and river.

Photo credits Morton Arboretum/Christopher Burke Engineering

Good Stewards of Working Lands

The area that drains into the Illinois River requires positive action to protect the land that in turn affects the river quality. There are many ways landowners can be successful in farming and still protect their investment and the natural resources that make central Illinois a productive agricultural system. Good stewards have a passion for conservation.

"I'm a believer in using personal conservation plans or watershed planning efforts to help get long-term projects, practices and priorities on the land."

Courtesy of USDA NRCS

Allen Williams

Rita Luedtke, Will County

The majority of eastern Will County's landscape is made up of rolling hills subject to erosion. Being a good steward of the soil can test the mettle of the best conservationist. Practicing conservation has been something Rita Luedtke has done for more than 25 years. She wants to do things the right way and is not afraid to try new techniques to achieve success. She is known within and around her community as a true conservationist.

With technical assistance and local, state and federal cost-share dollars, Luedtke has installed a host of practices that have improved wildlife habitat and prevented soil from entering area water bodies. Her farm has served as an educational tour site for FFA high school and local elementary school students. With Will County just minutes away from Chicago, Luedtke ensures that students maintain an appreciation and wonder of the natural world.

Luedtke and husband Jerry share their farm with deer, pheasants, quail (one of only a few wild coveys left in the county), rabbits, song birds, muskrats, egrets, blue herons, coyotes, and insects – just to name a few. To have such a diverse wildlife population so close to the City of Chicago is a remarkable accomplishment.

Partners include USDA Natural Resources Conservation Service, USDA Farm Service Agency, US Fish and Wildlife Service, Illinois Department of Natural Resources, Illinois Department of Agriculture, Will and South Cook County Soil and Water Conservation Districts, and Kankakee River Ecosystem Partnership.

Courtesy of USDA NRCS

"I have used some of the cost-share programs and they have been very helpful," she said, *"but I would have done it on my own anyway; it just would have taken longer."*

Rita Luedtke

Allen Williams, Piatt County

Allen Williams has been farming in Piatt County since 1972. Every year that passes brings him new ideas, new strategies, and new ways of doing things better. Williams continually finds new ways to improve not only his operation and his crop quality, but also the quality of his soil and water resources.

Williams operates about 1,700 acres, 400 of which are certified organic.

Decades ago, Williams had concerns about soil and water quality and continues to find innovative ways to manage his crops in a more sustainable way—improving the crop and making money simultaneously. Experimenting with organic crops has taught him that it is possible and profitable to raise a high-quality crop that brings in a high price by meeting consumer demands. Williams raises corn and soybeans on most of his land but also grows specialty grains, blue corn, white corn, and food grade soybeans for tofu. Other crops Allen has grown include sunflowers, rye, barley, canola, vetch, cuphea, buckwheat and popcorn.

With the help of others, Williams turned his farm into The Stewardship Farm, a working farm dedicated to using research, observations and demonstrations to develop and promote agricultural systems. These foster stewardship of natural resources, strengthen the economic health of farmers and rural communities, and contribute to a healthy food and water supply.

Even though he remains the only organic producer in Piatt County, Williams encourages other farmers to explore the profitable possibilities that exist.

Partners include the University of Illinois Extension, the Illinois Stewardship Alliance, Illinois Sustainable Ag Network, USDA Natural Resources Conservation Service, Piatt County Soil and Water Conservation District and independent advisors.

Ted and Ron Gilles, Peoria County

Ted and Ron Gilles own and operate farmland along the Spoon River in Peoria County and are true stewards of the land. They grow corn, soybeans, hay and wheat. Much of the Gilles land is hilly and subject to eroding. But all acres are protected with a stellar conservation system. The farm includes almost every conservation practice available—and more. Their parents instilled a conservation ethic in them many years ago.

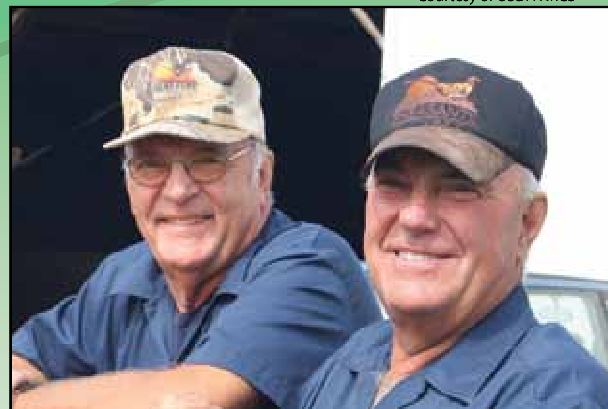
The Gilles brothers strive to share their bounty with others. They use the advice and programs of the federal, state, and other environmental groups to accomplish conservation goals and to set an example for others. They demonstrate great success with conservation practices and their land is a showplace of conservation practices at work—almost like a hands-on, working conservation catalog of solutions for the farm.

The Gilles brothers are proud of their operation and offer it as public educational venue on a regular basis. The fact that it's a profitable and productive farm is almost secondary to everything else this land and these men have to offer.

The Gilles play a tremendous role in conservation in Central Illinois. They operate a sustainable operation and share their knowledge with others. They make prudent use of available state and federal cost-share programs and supplement with their own money when needed to accomplish a goal or task. The Gilles team has a love of the land and they are passionate about making the most of the land for themselves and others. Their pride and enthusiasm for conservation is evident in all that they do.

Partners include the USDA Natural Resources Conservation Service, Peoria County Soil and Water Conservation District, independent advisors state agencies and other environmental groups such as Ducks Unlimited and Pheasants Forever.

Courtesy of USDA NRCS



Ron and Ted Gilles

"Take care of the land and the land will take care of you," –words of wisdom from their mother that guides their actions even today.

Courtesy of USDA NRCS

Gilles brothers host tours of their Conservation Farm

Courtesy of USDA NRCS

Additional Activities

Illinois Department of Agriculture (C2000 Conservation Practices Program) - Between 1996 and 2008, the agency cost-shared $17,485,431 on 8,078 projects which included conservation tillage, pasture & hayland establishment, grassed waterways, and terraces. For more information go to http://www.agr.state.il.us/

Illinois Department of Natural Resources (Pheasant Habitat Areas – Habitat Team) - The Habitat Team has established more than 5,000 acres of wildlife grassland habitat for over 300 different private landowners since 2003. Partners on some of these projects include: Pheasants Forever, Quail Unlimited, USDA Natural Resources Conservation Service, USDA Farm Service Agency and Illinois Soil and Water Conservation Districts. For more information go to http://dnr.state.il.us./orc/wildliferesources/theplan/implementation.html

Illinois Farm Bureau – They continue to publicize and promote conservation programs in the Illinois River Watershed and throughout Illinois. Illinois Farm Bureau uses a weekly publication, FarmWeek, and their statewide radio network to highlight details of the programs and issues. They continue to actively participate in groups such as the Illinois Buffer Partnership, Illinois Council on Best Management Practices (C-BMP), Mahomet Aquifer Consortium, USDA Natural Resources Conservation Service State Technical Committee, Illinois River Coordinating Council, Landowner Incentive Program Advisory Group, Conservation Tour in the Illinois River Watershed, Envirothon Committee, Illinois River Conference Planning Committee, Water Conference, Illinois Fish and Wildlife Action Team, Invasive Species Council and Advisory Committee, Environmental Quality Incentive Program Subcommittees, Nutrient Standards Advisory Committee, Conservation Reserve Enhancement Program Advisory Committee, Trees Forever, Illinois Conservation Climate Initiative Advisory Group, Advisory Committee for Regional Water Supply Planning Committees. For more information go to http://www.ilfb.org/

University of Illinois Extension – Data collected for the publication "Illinois Tillage Data, Trends and Impact on a Carbon Footprint" were released in 2008. The data are collected by county offices of the Illinois Soil and Water Conservation Districts and the USDA Natural Resources Conservation Service. This information is used to calculate the acres of each tillage system for each crop. Data from Illinois and other states throughout the nation are then submitted to the Conservation Technology Information Center at Purdue University for compilation, analysis, and interpretation to provide a national perspective on tillage adoption and trends. University of Illinois research has confirmed that benefits of no-till include: controlling soil erosion, protecting water quality, reducing fuel usage, improving wildlife habitat, reducing wind erosion and improving air quality, increasing organic matter, and improving stream quality and fish numbers. No-till also protects the environment by sequestering carbon and reducing the greenhouse gases that contribute to global warming. That makes no-till farming the true "Pollution-Solution!" For more information go to http://web.extension.uiuc.edu/state/index.html

Courtesy of USDA NRCS

Working Lands and Reserved Lands

For definitions on these programs and more, see Appendix pages A-1 and A-2

Working Lands

The term "Working Lands" relates to land kept in active agricultural production of food, fiber and fuel. Conservation programs for these lands allow for resource protection and crop production at the same time. These practices can be as simple as a tillage practice that landowners can do on their own or more elaborate practices that require technical and financial assistance.

The assistance needed, whether it's technical or financial, comes from a variety of agencies and organizations. The following is a list of some programs available.

Farm Bill Programs
- USDA Natural Resources Conservation Service *(www.il.nrcs.usda.gov)*
  - Environmental Quality Incentives Program (EQIP)
  - Farm and Ranch Lands Protection Program (FRPP)
  - Wildlife Habitat Incentive Program (WHIP)
  - Conservation Stewardship Program (CSP)
  - Conservation Security Program (CSP)
- USDA Farm Service Agency *(www.fsa.usda.gov/)*
  - Farmable Wetland Program (FWP)

Illinois Department of Agriculture *(www.agr.state.il.us/C2000/index.html)*
- Conservation 2000, Sustainable Ag Grant Program *(C2000)*

Illinois Environmental Protection Agency (Section 319 program) *(http://www.epa.state.il.us/)*

US Fish and Wildlife Service *(www.fws.gov/)*
- Landowner Incentive Program

Conservation Technical Assistance - Provided by USDA Natural Resources Conservation Service, Illinois Soil and Water Conservation Districts and Technical Service Providers.

Reserved Lands

The term "Reserved Lands" relates to land that is enrolled in a long-term conservation program that removes it from production and establishes a conservation cover. Generally, this land is less desirable for production. It is best converted to a conservation cover or returned to its natural state of prairie and forest land where soil erosion is reduced and water quality and wildlife habitat is improved. Private landowners do retain the land for other uses such as bird watching or hunting.

The assistance needed, whether it's technical or financial, come from a variety of agencies and organizations. The following is a list of some programs available.

Farm Bill Programs:
- USDA Farm Service Agency *(www.fsa.usda.gov/)*
  - Conservation Reserve Program (CRP)
  - Conservation Reserve Enhancement Program (CREP)
- USDA Natural Resources Conservation Service *(www.il.nrcs.usda.gov)*
  - Emergency Watershed Protection Program - Floodplain Easement (EWPP-FPE)
  - Wetlands Reserve Program (WRP)

Conservation Technical Assistance - Provided by USDA Natural Resources Conservation Service, Illinois Soil and Water Conservation Districts and Technical Service Providers.

Appendix

Programs and Definitions

Conservation 2000 (C2000) - C2000 is a comprehensive, six year, $100 million initiative, designed to take a holistic, long-term approach to protecting and managing Illinois' natural resources. Illinois House Bill 1746 was signed into law extending the C2000 Program until the year 2009. In 2008, House Bill 1780 was signed into law as Public Act 95-0139, extending the program to 2021 as Partners for Conservation. Conservation 2000 provides additional funding for the sustainable agriculture grant program, the conservation practices program, the streambank stabilization and restoration program, and the soil and water conservation district grants program. The Partners for Conservation Program funds programs at Illinois Department of Natural Resources, Illinois Department of Agriculture, and Illinois Environmental Protection Agency.

Conservation Practices Program (CPP)- This state-supported initiative protects natural resources and enhances outdoor recreational opportunities in Illinois. The program, which became law in 1995, implements strategies for maintaining the viability of Illinois' soil and water resources into the 21st century and beyond. Several state agencies share responsibility for administering the program and the Illinois Department of Agriculture oversees the program's agriculture-related components.

Conservation Reserve Program (CRP) - CRP was authorized under the Food Security Act of 1985 (Farm Bill) providing technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, conservation planning and practice implementation. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as native grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices.

Conservation Reserve Enhancement Program (CREP) - CREP is convenient for producers because it is based on the familiar, highly successful CRP model. CREP is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. CREP is administered by USDA Farm Service Agency and is a partnership among producers; tribal, state, and federal governments; and, in some cases, private groups.

Conservation Security program (CSP) - CSP is a voluntary program that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands. The Farm Security and Rural Investment Act of 2002 (Farm Bill) (Pub. L. 107-171) amended the Food Security Act of 1985 to authorize the program. CSP is administered by USDA Natural Resources Conservation Service.

Conservation Stewardship Program (CSP) – CSP is a voluntary program that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands. CSP replaces the Conservation Security Program. The Food, Conservation, and Energy Act of 2008 (Farm Bill), authorizes the new Conservation Stewardship Program for Fiscal Year 2009-12. Enrollment of acreage into program is authorized through Fiscal Year 2017.

Conservation Stewardship Program (CSP) - CSP program was designed to encourage landowners to maintain unimproved land in order to protect limited environmental resources. CSP received final legislative approval and was signed into law in 2007. The bill offered the incentive of reduced valuation for property taxes to landowners who were willing to commit to maintaining and managing unimproved land. Landowners who wish to receive the special valuation for unimproved land provided by this law are required to prepare a Conservation Management Plan according to rules developed by the Illinois Department of Natural Resources.

Environmental Quality Incentive Program (EQIP) - EQIP is a voluntary conservation program authorized under the Federal Agriculture Improvement and Reform Act of 1996 (Farm Bill) that provides assistance to farmers who face threats to soil, water, air, and related natural resources on their land. Administered by the USDA Natural Resources Conservation Service, EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land. EQIP is a competitive process.

Emergency Watershed Protection Program - Floodplain Easement (EWPP-FPE) - EWPP-FPE was authorized under Section 382 of the Federal Agriculture Improvement and Reform Act of 1996, Public Law 104-127, (Farm Bill) to purchase floodplain easements as an emergency measure. Under the floodplain easement option, a landowner voluntarily offers to sell to the USDA Natural Resources Conservation Service a permanent conservation easement with full authority to restore and enhance the floodplain's functions and values. Floodplain easements restore, protect, maintain, and enhance the functions of the floodplain; conserve natural values including fish and wildlife habitat, water quality, flood water retention, ground water recharge, and open space; reduce long-term federal disaster assistance; and safeguard lives and property from floods, drought, and the products of erosion.

Programs and Definitions continued

Landowner Incentive Program (LIP) - LIP is a new program available to Illinois landowners in the Lower Sangamon River Watershed to manage their lands for species in greatest need of conservation. There are financial and technical resources available through a partnership with the US Fish & Wildlife Service, Illinois Department of Natural Resources and local Soil and Water Conservation Districts.

Section 319 - Congress enacted Section 319 of the Clean Water Act in 1987 to establish a national program to control Nonpoint Source (NPS) pollution. Section 319 helps states address NPS pollution through the development of assessment reports; adoption of management programs; and implementation of those management programs. The Illinois Environmental Protection Agency is the designated state agency in Illinois to receive 319 federal funds from US Environmental Protection Agency. Illinois Environmental Protection Agency works cooperatively with units of local government and other organizations toward the mutual goal of protecting the water quality in Illinois through the control of NPS pollution. Technical assistance and information/education programs are also eligible.

Section 519 - Water Resources Development Act of 2000 authorized a Comprehensive Plan to develop and implement a restoration program and a long-term resource monitoring program, and evaluate new technologies and innovative approaches, and to construction of critical restoration projects. These efforts relate to the state's Illinois Rivers 2020 initiative, a proposed 20-year Federal/State effort to restore and enhance the 30,000 square-mile Illinois River Watershed.

Section 8004(b)(3)(B) -Section 8004, ecosystem restoration, was authorized in the Water Resources Development Act of 2007, Title VIII for the US Army Corps of Engineers to address cost-sharing for certain restoration projects. Actions must be consistent with requirements to avoid adverse effects on navigation and ecosystem restoration projects to attain and maintain the sustainability of the ecosystem of the Upper Mississippi River and Illinois River in accordance with the general framework outlined in the Plan.

Section 906 (e) - Section 906 was authorized in the Water Resources Development Act of 1986 for construction and/or study of US Army Corps of Engineers projects, such as port development, inland navigation, flood control, streambank and shoreline stabilization,as well as feasibility and control studies. The initial project costs will be Federally funded when such enhancement provides benefits that are determined to be national and are designed to benefit species that have been listed as threatened or endangered.

Section 1135 - Section 1135, authorized in the Water Resources Development Act of 1986, provides the authority to modify existing US Army Corps of Engineers projects to restore the environment and construct new projects to restore areas degraded by Corps projects, after a detailed investigation shows it is technically feasible, environmentally acceptable, and provides cost effective environmental benefits. Project costs are shared 75 percent federal, 25 percent non-federal and also allow credit for certain works in-kind, including provision of materials and construction activities.

Streambank Stabilization Restoration Program (SSRP) - SSRP is designed to demonstrate effective, inexpensive vegetative and bioengineering techniques for limiting streambank erosion. Program monies fund demonstration projects at suitable locations statewide and provide cost-share assistance to landowners with severely eroding streambanks. Illinois Soil and Water Conservation Districts and the USDA Natural Resources Conservation Service serve as partners in implementing the program.

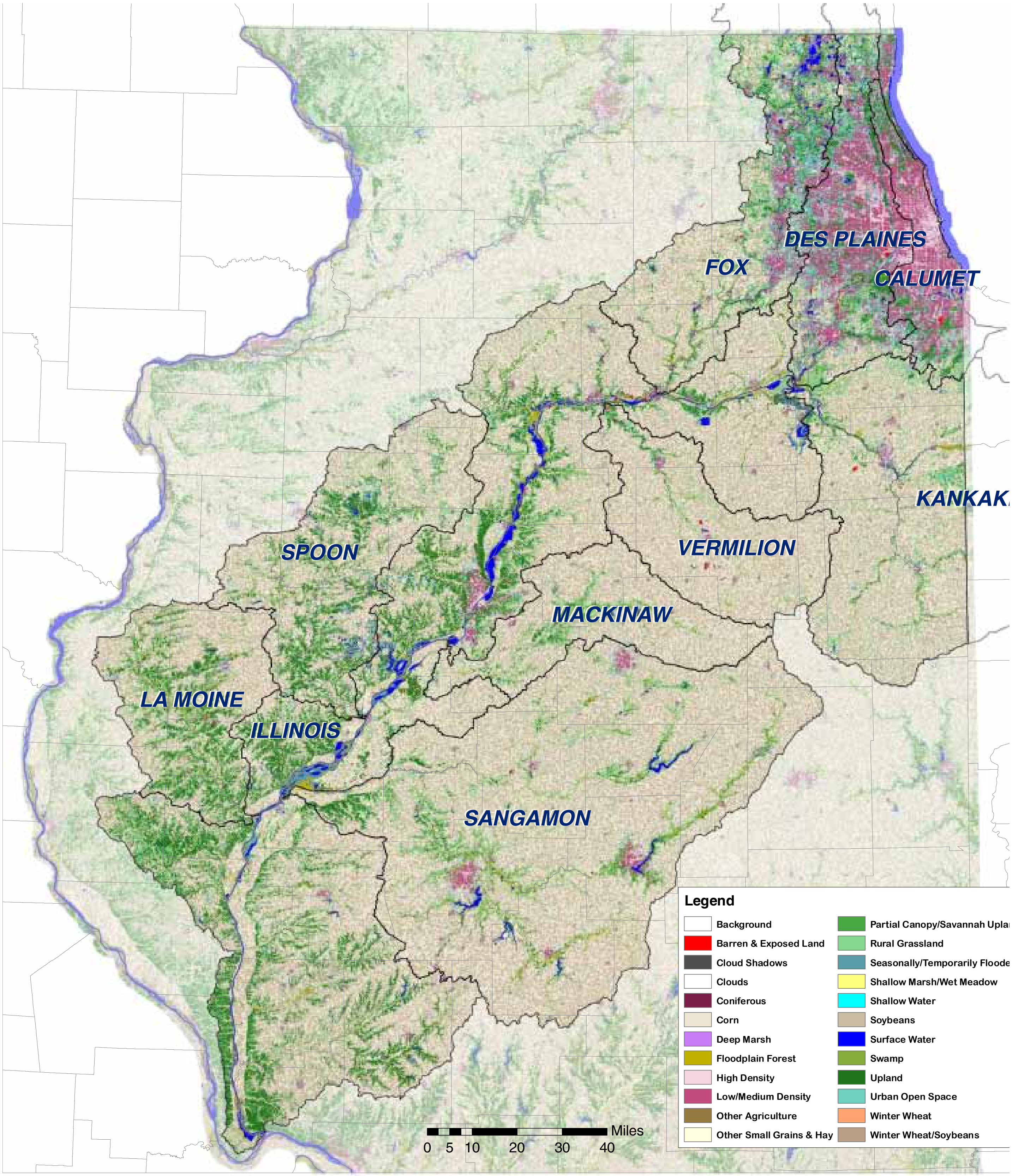
Wetlands Reserve Program (WRP) - WRP is a voluntary program authorized under the Food Agricultural Conservation and Trade Act of 1990 (Farm Bill) that offers landowners the opportunity to protect, restore, and enhance wetlands on their property. The USDA Natural Resources Conservation Service (NRCS) provides technical and financial support to help landowners with their wetland restoration efforts. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection.

Wildlife Habitat Incentive Program (WHIP) - WHIP is a voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Indian land. Authorized under the Federal Agriculture Improvement and Reform Act of 1996 (Farm Bill), the USDA Natural Resources Conservation Service administers WHIP to provide both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat.

Maps

Illinois River Watershed Land Cover map

(Source: Luman and Weicherding, 1999)

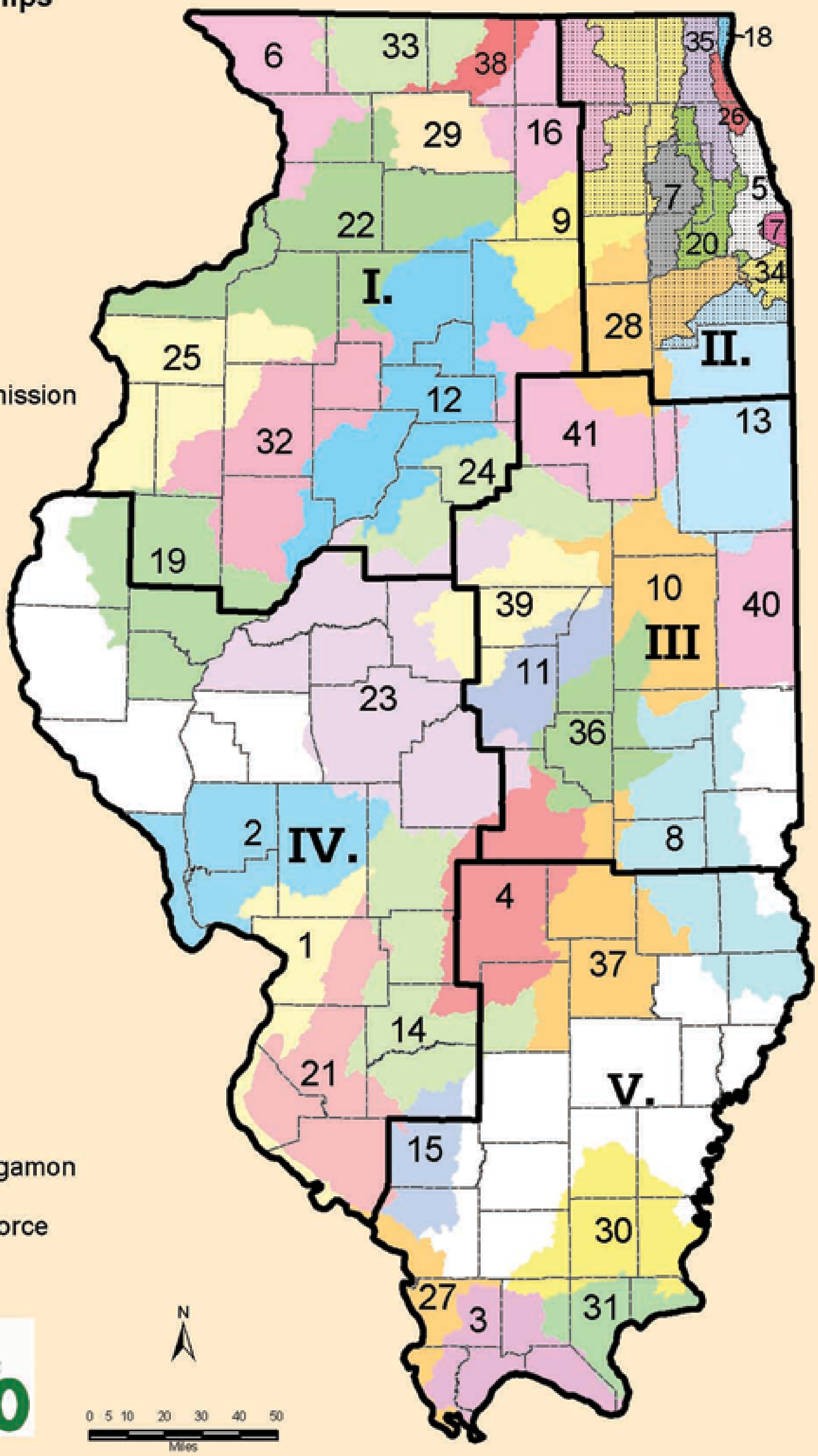


Conservation 2000 Ecosystem Partnerships

With DNR Administrative Regions

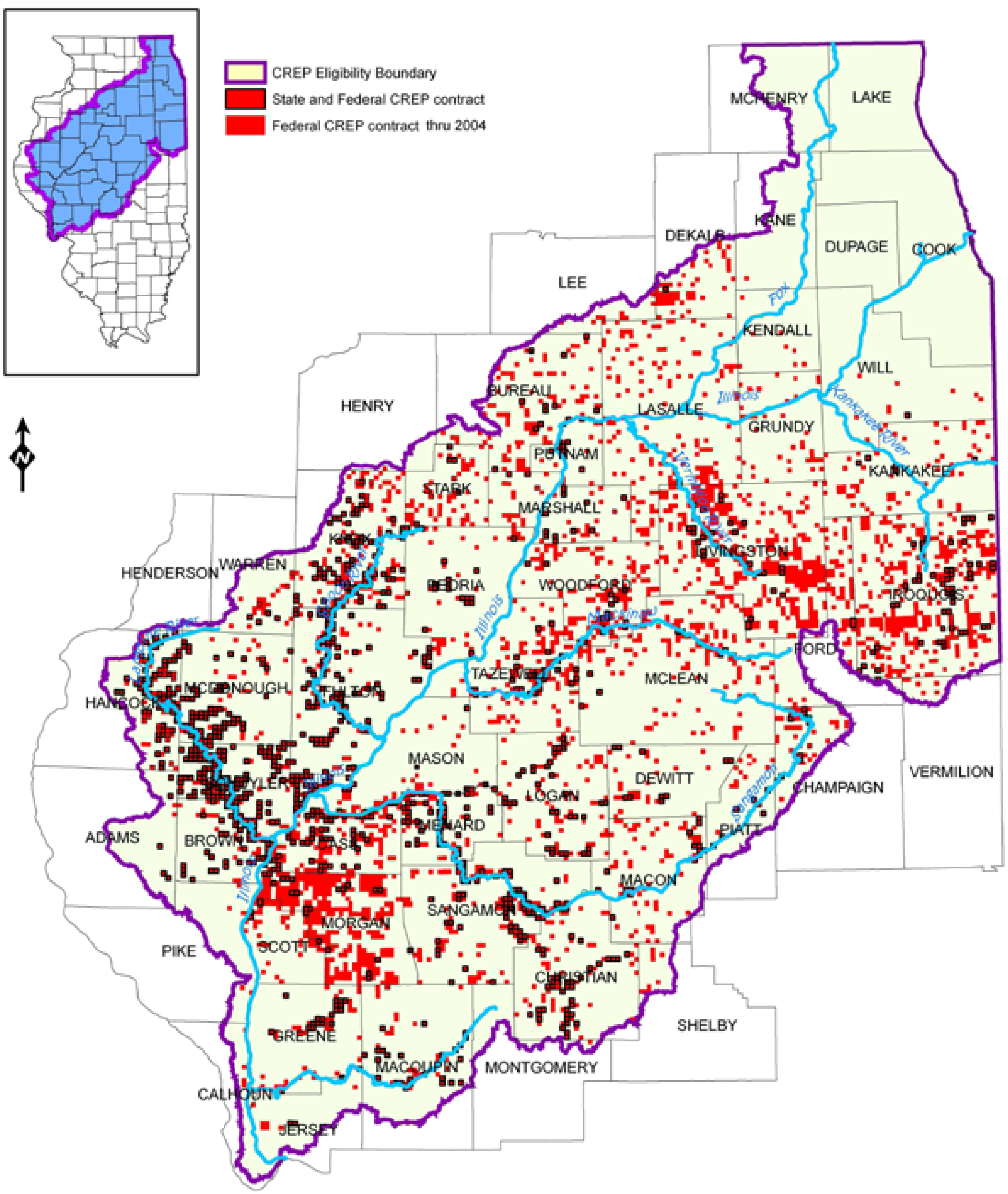
C2000 Ecosystem Partnerships

1. American Bottom
2. Big Rivers
3. Cache River
4. Carlyle Lake
5. Chicago Wilderness
6. Driftless Area
7. DuPage River Coalition
8. Embarras River
9. Fox River
10. Headwaters
11. Heart of the Sangamon
12. Illinois River Bluffs
13. Kankakee River Basin Commission
14. Kaskaskia River
15. Kinkaid Area Watershed
16. Kishwaukee River
17. Lake Calumet
18. Lake Michigan Watershed
19. La Moine River
20. Lower Des Plaines
21. Lower Kaskaskia
22. Lower Rock River
23. Lower Sangamon Valley
24. Mackinaw River
25. Mississippi Western Five
26. North Branch Chicago River
27. Ozark Hills
28. Prairie Parklands
29. Rock River
30. Saline Basin
31. Shawnee
32. Spoon River
33. Sugar-Pecatonica Rivers
34. Thorn Creek
35. Upper Des Plaines
36. Upper Kaskaskia
37. Upper Little Wabash
38. Upper Rock River
39. Upper Salt Creek of the Sangamon
40. Vermilion
41. Vermilion Watershed Task Force



January, 2007
IDNR C2000 Ecosystems Program

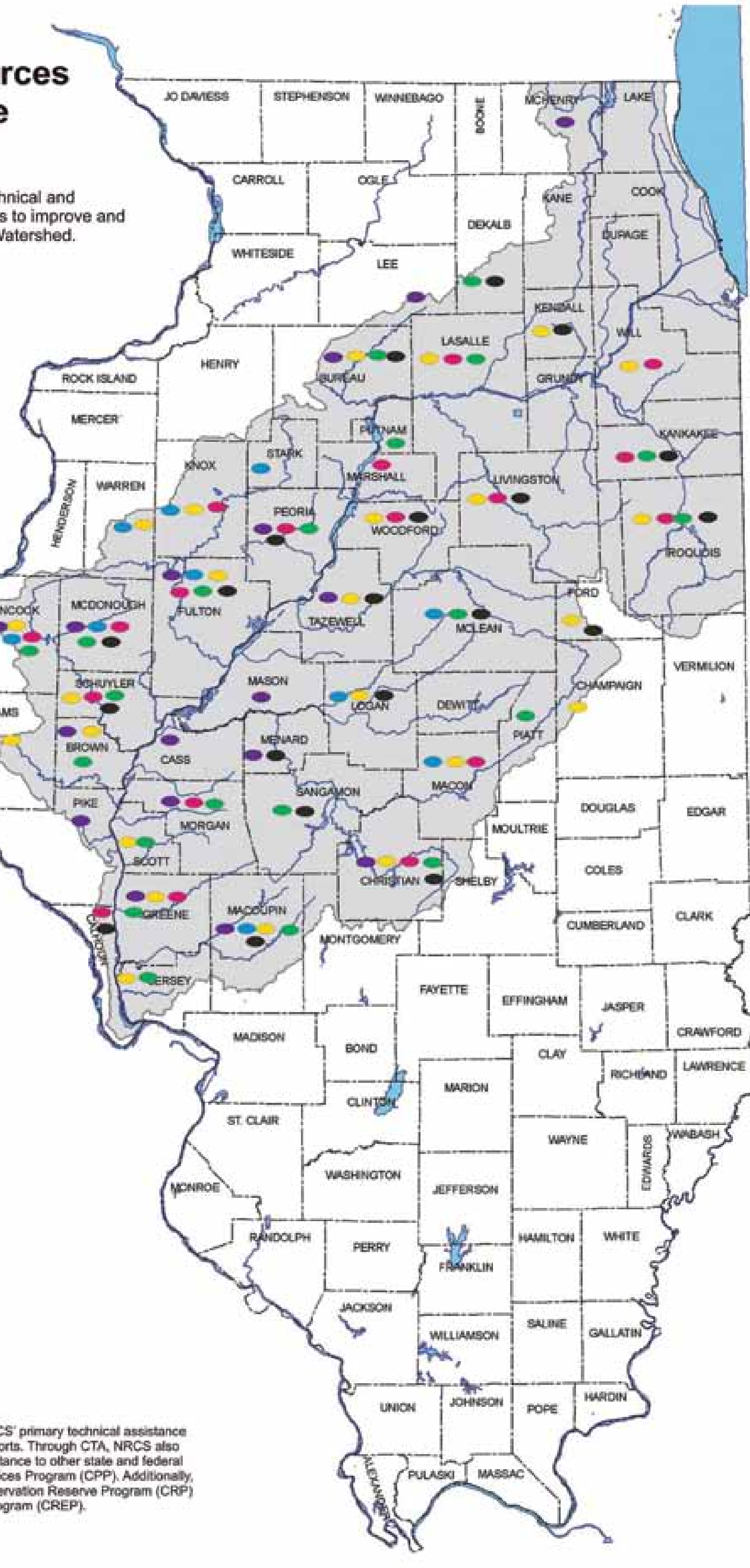
Location of Approved Illinois CREP Contracts from the USDA and State of Illinois All Years as of 10/2008




EQIP Streambank Project Locations
Spoon River Special Initiative
EQIP Project Site
Spoon River Watershed
County Boundary
Whiteside
Lee
Henry
Bureau
Mercer
Stark
Forman Cr
Knox
Slug Run
Henderson
Warren
Cedar Cr
Latimer Cr
Spoon R
Haw Cr
Negro Cr
Peoria
Little Negro Cr
Cedar Fork
Big Negro Cr
Swan Creek
Cedar Cr
Swan Cr
McDonough
Fulton
Tazewell
Hancock
Spoon R
Mason
Schuyler
Logan

USDA-Natural Resources Conservation Service (NRCS)

Location map where NRCS has provided technical and financial assistance for conservation practices to improve and protect the water quality in the Illinois River Watershed.



Soil Erosion Reduction

Through NRCS technical assistance with conservation practices, soil erosion is reduced significantly (approximately 1 million tons per year) in the Illinois River watershed. By applying soil and water conservation practices, in the watershed have been improved.

Many of NRCS projects are for both soil and water protection. However, some are directly related to the protection of water quality.

(Colors designate the type of practice within the county.)

Wetlands Reserve Program (WRP): since 1995, 34 contracts (approx. 11,480 acres) have been written.

Environmental Quality Incentives program (EQIP): more than 30 landowners installed streambank stabilization practices along tributaries in the Spoon River Watershed through a special project funding. Additional counties have also installed streambank stabilization practices.

Comprehensive Nutrient Management Plans (CNMP): 102 CNMP were written during fiscal years 2002-2007.

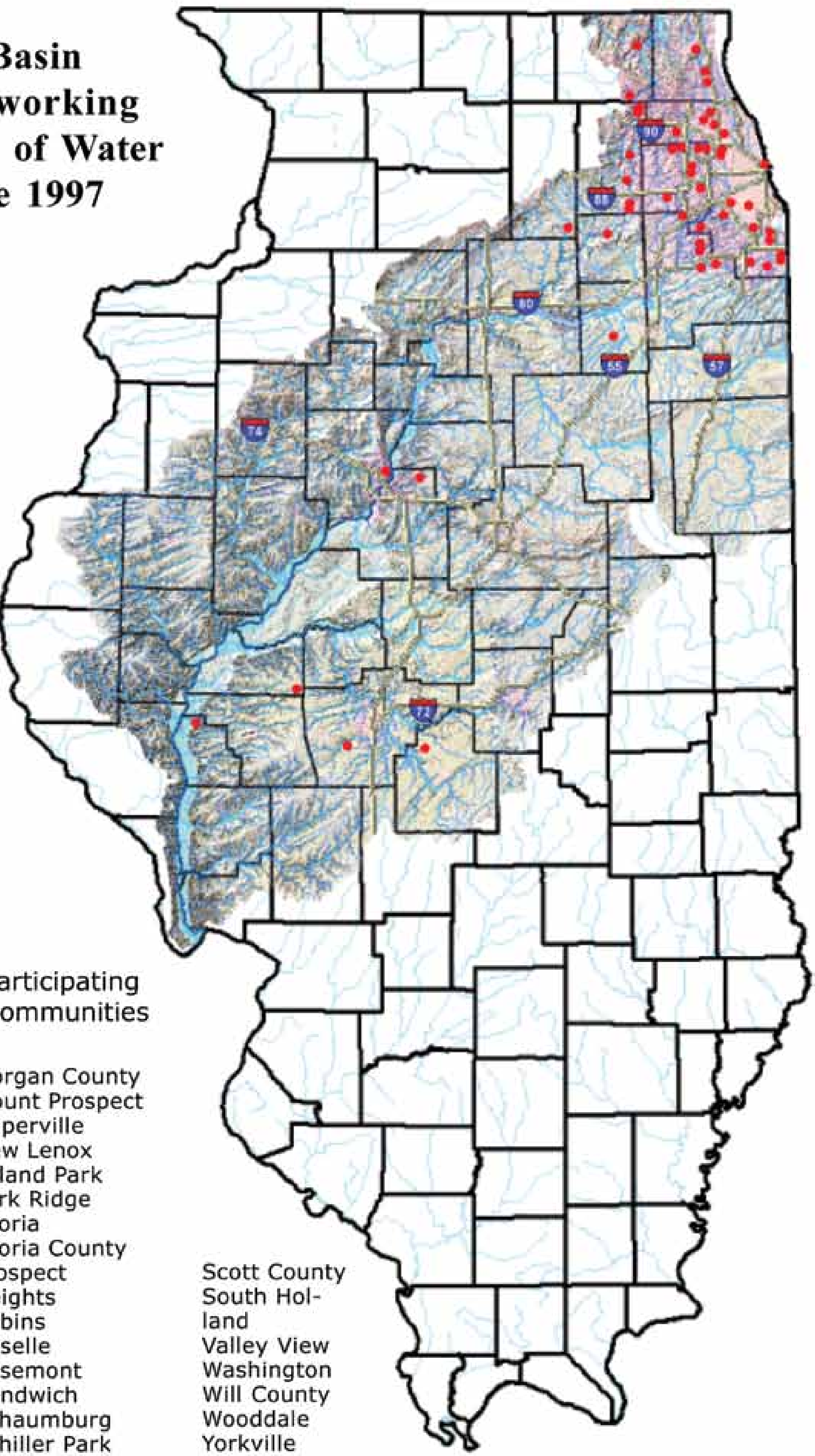
Terraces: 86 landowners installed more than 188,800 feet (almost 36 miles) of terraces during fiscal years 2002-2007.

Pasture and Hayland Planting: approximately 2,811 acres from 84 landowners were in contracts during fiscal years 2002-2007.

Waste Utilization: 107 contracts to prevent agricultural waste from enter waterways were completed on more than 35,100 acres between 2002-2007.

Conservation Technical Assistance (CTA): NRCS' primary technical assistance program to assist customers with conservation efforts. Through CTA, NRCS also provides significant time delivering technical assistance to other state and federal agency programs such as the Conservation Practices Program (CPP). Additionally, NRCS provides technical assistance for the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancements Program (CREP).

Illinois River Basin Communities working with the Office of Water Resources since 1997



Algonquin
Ashland
Aurora
Auburn
Batavia
Bensenville
Bluffs
Carpentersville
Cass County
Chicago
Chicago Heights
Cook County
Des Plaines
Dolton
DuPage County
Dundee
Dwight
East Peoria
Edinburg
Elk Grove
Elmhurst
Evergreen
Fairbury
Fox Lake
Frankfort
Franklin Park
Grundy County
Gurnee
Hickory Hills
Itasca
Joliet
Justice
Kane County
Kendall County
Lake County
Lansing
Lemont
Libertyville
Lincolnshire
Lombard
Lynwood
Matteson
Mazon
McHenry
McHenry County
Mason County
Mokena
Montgomery
Morgan County
Mount Prospect
Naperville
New Lenox
Orland Park
Park Ridge
Peoria
Peoria County
Prospect Heights
Robins
Roselle
Rosemont
Sandwich
Schaumburg
Schiller Park
Scott County
South Holland
Valley View
Washington
Will County
Wooddale
Yorkville

Document Contributors

Association of Illinois Soil and Water Conservation Districts (http://www.ilconservation.com/)

Economic Development Council for Central Illinois (http://www.edc.centralillinois.org/)

Farm Bureau (http://www.ilfb.org/)

Heartland Water Resources Council (http://www.heartlandwaterresources.com/)

Illinois Department of Agriculture (http://www.agr.state.il.us/)

Illinois Department of Natural Resources (http://dnr.state.il.us/)
  Land Management Division (http://www.dnr.state.il.us/lands/landmgt/)
  Office of Water Resources (http://dnr.state.il.us/OWR/)

Illinois Environmental Protection Agency (http://www.epa.state.il.us/)
  Bureau of Water (http://www.epa.state.il.us/water/)

Resource Conservation and Development Council
  Prairie Hills (http://www.il.nrcs.usda.gov/contact/directory/rcd.html)
  Prairie Rivers (http://www.prairieriversrcd.org)
  Two Rivers (http://www.2riversrcd.org)

The Nature Conservancy (http://www.nature.org/)

University of Illinois, Extension (http://web.extension.uiuc.edu/state/index.html)

University of Illinois
  Illinois State Geological Survey (http://www.isgs.uiuc.edu/)
  Illinois State Water Survey (http://www.iga.uiuc.edu/)
  Illinois Sustainable Technology Center (http://www.istc.illinois.edu/)

US Army Corps of Engineers
  St. Louis District (http://www.mvs.usace.army.mil/)
  Rock Island District (http://www.mvr.usace.army.mil/)

USDA Farm Service Agency (http://www.fsa.usda.gov/il)

USDA Natural Resources Conservation Service (http://www.il.nrcs.usda.gov/)

Special recognition for the production of this document

Jody Christiansen, USDA Natural Resources Conservation Service (Editor/Design/Layout)
Christine Davis, Illinois Environmental Protection Agency (Contact for Information)
Jon Hubbert, USDA Natural Resources Conservation Service (Contact for Information)
Marilyn Leyland, Communications Coordinator, River Conference (Contributing Writer/Editor)