

2009

Central Indiana Green Infrastructure Network: Implementation



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IMPLEMENTATION

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OVERVIEW

The implementation of the Central Indiana Green Infrastructure Network will require the cooperation of many different levels of government, stakeholders and the public. Like the intricate patterns in a quilt, the implementation of a green infrastructure network relies on bringing together a wide range of existing government programs, private sector initiatives and focusing public action. An implementation quilt is a framework for matching available resources such as planning tools, existing programs, funding opportunities and people with the needs articulated in the green infrastructure network. For the Central Indiana Land Trust, the quilt is the road map for implementing the green infrastructure network, assessing what government programs are being utilized or have additional capacity, what tools the land trust can bring to bear, and how the implementation of the green infrastructure network could be financed.

One of the strong patterns of the Central Indiana Green Infrastructure Network is the importance of rivers, streams, and wetland resources. Conserving aquatic and wetland resources is based on sound ecology principles. The green infrastructure strategy of protecting these natural resources is fiscally prudent public policy since well functioning eco-systems provide benefits and services to communities such as improved flood control, clean drinking water and recreational opportunities.

In the Spring of 2008 the Midwest region received record setting rainfalls resulting in significant flooding. Initial damage figures for crop loss for the state of Indiana were placed at \$800 million (Martin, 2008). The White River Watershed (Morgan, Monroe, Johnson, Bartholomew and Owen Counties) was one of the hardest hit regions by the spring flooding. According Dr. Michael Hicks at Ball State University, initial damage assessments for the White River were placed at \$88 million. Damage to grey infrastructure (railways, roads, bridges, airports, sewers, electrical utilities) was estimated at \$13.6 million for the White River watershed. Estimates for crop damage in the Whiter River watershed were placed at \$14 million. Adding to the short term problem of disrupting of the growing season for farming, the flood removed tons of prime top soil. One inch of top soil takes thousands of years to form, making the full recovery for farming from a significant flood event challenging (Martin, 2008). In addition, once that soil enters the river and stream systems in high levels, it reduces water quality, silts up river channels and adversely affects the habitat of sensitive aquatic species such as fresh water mussels.

The Central Indiana Green Infrastructure Network can help the region become more disaster resistance by increasing the amount of land for natural storm water retention, slowing runoff by replanting riparian areas with appropriate native vegetation and preventing the erosion of precious top soil. Restored rivers and streams provide recreational benefits for boating, fishing, and blue way trails. Wildlife use well conserved rivers and streams as corridors to move across the landscape. As much of Central Indiana has been developed, river and stream corridors are one of the remaining options for corridor development.

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Environmental restoration is another theme in the implementation quilt. The implementation quilt highlights many government programs that provide funding and technical assistance to restore wetlands, plant vegetated buffers along rivers and streams and remove invasive species. The Central Indiana Green Infrastructure Network highlights areas for restoration to guide the Central Indiana Land Trust and its partners in focusing restoration efforts to rebuild corridors and buffer core areas. As the landscape of central Indiana has been transformed over many years, the restoration of important elements of the ecosystem will not happen overnight and there are significant obstacles to overcome. However, the Central Indiana Green Infrastructure Network will help the Central Indiana Land Trust be strategic in its approach to conservation, maximizing its resources and those of its partners to achieve the best possible outcome.

A final pattern in the implementation quilt is the reliance on helping landowners with the stewardship of their lands. Many private landowners are already excellent stewards. Rewarding landowners for their sound stewardship efforts and encouraging other landowners to adopt ecologically beneficial management practices is crucial to making the Central Indiana Green Infrastructure Network a reality. There are many tools that can help landowners including funding programs for best management practices, conservation easements, and funding for restoration of habitat. The Central Indiana Green Infrastructure Network will help the Central Indiana Land Trust identify landowners to work with in a voluntary, collaborative effort to achieve results that benefit the landowner and implement the green infrastructure network.

FEDERAL PROGRAMS SECTION

Federal Emergency Management Agency (FEMA)

National Flood Insurance Program (NFIP) and Community Ranking System (CRS)

Through the NFIP, the federal government has attempted to make flood insurance available to people living in flood-prone areas. One of the factors that determines the flood insurance premiums paid by landowners is the degree of planning undertaken by their community. A community that participates in the CRS goes beyond the minimum standards set for NFIP and as a result of this extra effort, residents may receive lower insurance premiums. The discount received by communities can range from 5% to 45% depending on the flood zone and the community's CRS classification. Nationally, over 20,000 communities participate in the NFIP with 1,080 communities participating in the more rigorous CRS (NFIP/CRS Winter 2007-2008).

One of the unfortunate facts with flooding is that often the flood events repeatedly impact the same property. Each year the NFIP provides over \$200 million in flood insurance claim payments to what is known as "repetitive loss properties" (NFIP/CRS Winter 2007-2008). A repetitive loss property is defined by NFIP as any property, for which the NFIP has paid two or more flood claims of \$1,000 or more in any given 10-year period since 1978. Between 1978 and 2004, FEMA made over \$18.5 million in payments on repetitive loss properties in Indiana (GAO, 2004). Reducing the amount of repetitive loss property in a community is one of the overarching goals of the CRS initiative.

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In the study area for the Central Indiana Green Infrastructure Network, the cities of Anderson, Indianapolis, Noblesville and counties of Hamilton and Hancock participate in CRS. By participating in CRS the City of Indianapolis has reduced its overall premiums by over \$417,000 each year. The CRS staff examines a community's approach to 18 different activities such as open space preservation, land acquisition, development regulations, mapping standards, storm water management, and outreach projects. Communities are given credit for meeting the open space requirement when flood prone lands are permanently preserved either by fee acquisition or by a deed restriction or other permanent legal device to that prohibit building or fill from being placed on the land. Communities that acquire repetitive loss properties, remove structures from the properties and set the lands aside as open space, would have potential for earn credits under both the open space activity and acquisition activity of CRS. Every five years, participating communities are reviewed and evaluated by CRS staff.

The cities of Anderson, Indianapolis and Noblesville as well as Hamilton and Hancock Counties received credits based on initiatives to conserve land vulnerable to flooding as public open space. Currently, only the City of Noblesville receives credit for acquisition as part of its CRS efforts. The Central Indiana Green Infrastructure Network could be a resource that communities could use to help with their open space planning and mapping efforts in preparing an application for CRS. When used with flood plain maps, the green infrastructure network maps can be a useful guide to identify lands that are both flood prone have as well as have habitat value and could be part of a region conservation network. Lands permanently protected by land trusts through fee acquisition or conservation easements within a floodplain may be counted towards achieving CRS credits for open space requirement – provided that documentation is included and that there are no structures on the property. For more information about CRS please contact Scott Cofoid, 815-220-1002 or by email scofoid@iso.com.

National Park Service

River, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance Program, also known as Rivers & Trails or RTCA, works with community groups and local, state, and federal government agencies to conserve rivers, preserve open space, and develop trails and greenways. The program provides technical assistance to partners for local projects that do not have to be located near a National Park.

RTCA has been very active in Central Indiana, supporting 30 projects over the past 15 years. In 2002 RTCA worked with the Greenways Foundation and sponsored a series of planning workshops for guiding trail and greenway planning in the Indianapolis metropolitan area. Many of ideas generated by these workshops helped build the momentum for the state's trail and greenway plan released in 2006. Proposals for projects are due August 1st, however consultation with RTCA staff is advised. Submitting an application for a county or regional proposal for land or paddle trails building on the overall Central Indiana Green Infrastructure Network would maximize the benefits of this technical assistance program. For more information please contact Rory Robinson at rory_robinson@nps.gov or by phone at (330) 657-2951.

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Natural Resource and Conservation Service (NRCS) Programs

NRCS supports many programs to provide incentives and technical assistance to private landowners to steward their land in a manner that benefits the environment. Expanding landowner awareness of the NRCS programs and increasing the utilization of these programs is one step toward implementing the The Central Indian Green Infrastructure Network. Several NRCS programs are highlighted below as well as their current usage status within the region.

According to the latest NRCS agricultural census, released in February of the year 2009, Indiana is home to 58,800 farms, covering 15 million acres. Of these statewide totals, over 365,321 acres of farmland are enrolled in conservation oriented landowner incentive programs (conservation reserve, wetlands reserve or conservation reserve enhancement programs). Within the nine county study area, 604 farms have enrolled 14,782 acres in the incentive programs. While this figure is not high, it is close to double to total from ten years ago, demonstrating that more landowners are seeing the benefits of adopting conservation strategies. These figures will only rise in the near future as USDA has opened a new office of Ecosystem Services and Markets which will be coordinating an increased number of incentive programs that recognize the many public benefits that well managed private lands provide.

Wetland Reserve Program (WRP)

WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The NRCS provides technical and financial support to help landowners with their wetland restoration efforts. Funding is provided for the purchase of conservation easements that permanently conserve land and term easements that expire after 30 years. To be eligible for WRP, the land must be cropland or pasture land and at least half of the land must have been considered wetland prior to being farmed. Applications for the program are accepted year round.

As of 2002 WRP had 31,000 acres enrolled across the state of Indiana. However, in the nine county study area, only three projects have been completed utilizing WRP. A total of 80 acres has been protected in Madison County with WRP easements and one restoration project has been completed in Marion County covering 20 acres. CILTI could use the The Central Indian Green Infrastructure Network to assist the NRCS in identifying lands and landowners that may have suitable lands for the WRP and work to help educate landowners about the benefits of NRCS programs. For more information call Jerry Roach, WRP Coordinator for Indiana by phone: 812-752-2269, Ext. 113 or Email: jerry.roach@in.usda.gov .

Case Study: Goose Pond and Wetland Reserve Program

In 2000, the USDA's Natural Resources Conservation Service (NRCS) purchased a permanent easement on the 8,000 acre Goose Pond property and began restoration activities of the wetlands and wildlife habitat. Restoration efforts included over 30 miles of earthen dikes, 400 acres of tree plantings, 1,400 acres of prairie restoration, nearly 5,000 acres of shallow water wetlands and a permanent 2,750-acre shallow water impoundment.

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The Indiana Department of Natural Resources (IN DNR), with the help of many partners, purchased the remaining fee interest from the landowner in October 2005. In effect, Goose Pond is managed by IN DNR with oversight by the NRCS which owns the underlying easement. The wetland restoration work is starting to be recognized by both wildlife and people. Last year, over 14 King Rails, a marshland dependent species and a focal species for the Central Indiana Green Infrastructure network, were seen at Goose Pond. To place this number in context, in the previous year only 28 King Rails were seen in the entire state of Indiana. Along with returning wildlife, in 2008 an estimated 3,000 sportsmen visited Goose Pond due to its abundant and diverse hunting and fishing opportunities. This wonderful wildlife management area started as a project of working cooperatively with a private landowner and is now a model of the power of restoring a landscape. For more information contact Brad Feaster by phone at (812) 659-9901 or by email at BFeaster@dnr.IN.gov .

Conservation Security Program (CSP)

CSP is a watershed-based approach to encouraging farmers to continue with the sound environmental stewardship of their property. NRCS recognized that watersheds provide a valuable ecological-based boundary to focus some of their support efforts as well as have a more meaningful measure of success. In 2008, only farms within the Upper East Fork of the White River Watershed were eligible to apply for the program. For the study area of the Central Indiana Green Infrastructure Network, only the south-eastern corner of Shelby county is part of the CSP focus watershed. In addition farmers must be in compliance with the Farm Bill's Highly Erodible Land/Wetland Compliance provision, have a record of rotation for pasture, and practice residue management, nutrient management and/or pest management on at least a portion of the cropland. CSP provides financial and technical support to the farmers selected to participate. For more information visit the Indiana NRCS website:

<http://www.in.nrcs.usda.gov/programs/CSP/csphomepage.html> .

Floodplain Easement Program (FEP)

FEP was established to remove flood-damaged cropland from production, while fairly compensating landowners. Floods such as the ones that occurred in Indiana in the spring of 2008 removed vast amounts of topsoil from farmland, making this land no longer viable for agriculture (Martin, 2008). Under the floodplain easement program, the landowner voluntarily sells to the NRCS a permanent conservation easement that provides the NRCS with the full authority to restore and enhance the floodplain's functions and values. To be eligible the land must have been flooded at least twice in the last ten years and once in the last 12 months.

In Indiana, FEP has not been active for six years until the flooding of the spring of 2008. Indiana was one of four states approved for federal funding of the FEP and over \$6.7 million has been authorized for floodplain easements in Indiana (USDA, 2008). In August of 2008, NRCS announced that the agency would be accepting applications until October 1st for FEP. Within the study area of the The Central Indian Green Infrastructure Network, one easement proposal is being evaluated in Shelby county.

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The land enrolled in this easement program will help reduce flood damage in the future by providing storage capacity during flood events. This land also makes for prime wildlife habitat, improves water quality, and provides for ground water recharge. FEP lands are a valuable part of the tapestry of conservation strategies that form a The Central Indian Green Infrastructure Network.

For more information call Jerry Roach, WRP Coordinator for Indiana by phone: 812-752-2269, Ext. 113 or Email: jerry.roach@in.usda.gov .

Conservation Reserve Program (CRP)

CRP is a federal program aimed at providing both technical and financial assistance to farmers and ranchers to convert highly erodible cropland to natural land cover types such as native grasses, riparian buffers and wildlife plantings. Farmers receive an annual rental payment for the term of the 10 to 15 year contract based on the agricultural rental value of the land. CRP is administered by the Farm Services Agency with technical assistance being provided by the NRCS.

Farm and Ranch Lands Protection Program (FRPP)

FRPP provides funds to help purchase development rights to keep productive farmland in agricultural uses. Working through existing programs, the USDA Natural Resources Conservation Service (NRCS) joins state, tribal, or local governments and non-governmental organizations to acquire conservation easements. The NRCS provides up to 50 percent of the fair market easement value.

Jim Dunaway, Soil Conservationist, Primary contact for Environmental Quality Incentives Program, Farm and Ranch Lands Protection Program, and Grassland Reserve Program. 317-290-3200, Ext. 334, Email: jim.dunaway@in.usda.gov .

Wildlife Habitat Incentive Program (WHIP)

WHIP is a voluntary program providing financial incentives to landowners to develop or restore habitat for fish and wildlife on their lands. Common WHIP projects include restoring wetlands and stream banks, replanting native plants, and prescribed burns to support fire dependent species. Participants work with the NRCS to prepare a wildlife habitat development plan outlining the landowner's goals for improving wildlife habitat including a list of practices and an installation schedule. WHIP contracts last 5, 10 and 15 years allowing for the restoration of essential plant and animal habitat.

Since 2003 a total of 368 WHIP contracts have been signed with landowners in Indiana. Of this total, 27 contracts or 7% were executed in the nine counties of central Indiana. For 2008 seven projects covering 54 acres were launched in the study area. These projects used a variety of restoration practices including developing and managing early successional habitat, managing upland wildlife habitat and enhancing wetlands. According to NRCS officials, the current focus of the Indiana WHIP program is on the removal of invasive species such as Kudzu, Autumn Olive, Asian Bush Honeysuckle, Tree of Heaven, Glossy Buckthorn, Multiflora Rose, Japanese Honeysuckle, and Periwinkle. The Central Indiana Green Infrastructure Network can be used by Central

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Indiana Land Trust and NRCS to help target restoration activities, placing the restored parcels in a network providing regional benefits.

In other parts of Indiana, WHIP has supported hedgerow planting and managing field boards and wetland restoration. Hedgerows can be used as corridors for birds and the federally listed Indiana Bat, to move between core and hub forest lands. As corridors and linkages within the study area are vulnerable to fragmentation due to development pressure. The Central Indiana Green Infrastructure Network can be used by CILTI and NRCS to identify parcels that would benefit from tree planting, hedgerows and other enhancements to increase the connectivity among forested patches. For more information about the WHIP program please contact MaryJo Woodruff at MaryJo.Woodruff@in.usda.gov or by phone at 317) 290-3200 ex. 311.

Conservation Easements

With the Congressional passage of the new Farm Bill in the spring of 2008, Congress renewed powerful tax incentives for the donations of conservation easements. A conservation easement is a legal agreement between a landowner and a conservation organization that permanently limits specified uses and development of the property to protect its natural and scenic features. Landowners who can donate a conservation easement still own the underlying fee interest in the land and the land remains on the local property tax rolls. The new legislation renews the generous tax deductions that a private landowner can receive including: the ability to deduct up to 50% of their income in any year, allowing farmers and ranchers to deduct up to 100% of their income and increasing the number of years over which a donor can take a deduction from 6 to 16 years. Frequently, conservation easements are donated to nonprofit organizations called land trusts, which then become responsible for monitoring the conditions of the easement.

Within the nine county study area, the Central Indiana Land Trust holds five easements covering 192 acres. A land trust or other conservation organization could use the green infrastructure network to locate landowners and provide information about these valuable tax incentives. With the green infrastructure network, the Central Indiana Land Trust hopes to increase its capacity to undertake and steward more conservation easements. For more information on easements contact Cliff Chapman, Conservation Director, CITLI, 317-631-5263 or by email at cchapman@conservingindiana.org.

US Fish and Wildlife Service Partners for Wildlife Program

As many lands that are important to migratory birds and federal trust species are privately owned, the US FWS launched a voluntary technical and financial assistance program, Partners for Wildlife, to encourage sound stewardship practices and habitat restoration for wildlife. The landowner, US FWS, and any other partners involved in a particular project make a "habitat development agreement" that extends for a minimum of 10 years. To leverage as many resources as possible, US FWS has made coordinating the Partners for Wildlife Program with the local offices of the NRCS a main objective for success.

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Since the program was launched in 1987, over 6,300 acres of uplands have been restored and over 7,300 acres of wetlands have been restored across Indiana. In the past ten years US FWS has completed 15 projects within the nine county study area of the green infrastructure plan. US FWS worked with Indy Parks and Recreation to restore 35 acres of bottomland hardwoods and 14 acres of prairie along the White River in Marion County at Southwestway Park in Indianapolis. The project adds to one of the largest blocks of habitat in the Indianapolis area, and has an active bald eagle nest adjacent to the site.

Through “in perpetuity” Landowner Agreements, Indy Parks and Recreation provided \$16,870 to match the Service’s \$8,500 to enlarge this unique site in the rapidly developing area of southern Marion County. US FWS has undertaken many projects with nonprofit organizations across Indiana and completing projects with the Central Indiana Land Trust, the Red Tail Conservancy and Central Indiana Chapter of Pheasants Forever. For more information contact state Coordinator: Jeff Kiefer by e-mail: jeffrey_kiefer@fws.gov and by phone: 812-334-4261 ex1212.

STATE PROGRAMS SECTION

Indiana Department of Environmental Management (IDEM) Encourage Watershed Protection Planning for Central Indiana

One potential funding source for additional planning work and implementation of measures to improve water quality is the federal Clean Water Act. The US Environmental Protection Agency (EPA) distributes Clean Water Act funds to Indiana Department of Environmental Management to reduce nonpoint source pollution.

Nonpoint source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. NPS pollution results from a wide variety of human activities on the land. In rural areas, NPS pollution can be traced to a range of sources including: leaking residential septic tanks, farming operations causing extensive soil erosion or spreading pesticide or manure leeching into nearby streams, and intensive forestry operations that might result in erosion near streams.

Under the Clean Water Act, each state is required to examine the uses of water bodies with allowable levels of different pollutants every two years. IDEM uses the information on impaired waters to help direct its funding of watershed planning efforts and restoration activities under the Clean Water Act Section 319 program, which provides federal funding to the states to reduce nonpoint source pollution. In recent years, IDEM has favored funding large scale 319 planning and restoration projects in order to achieve more meaningful results. In 2008 IDEM designated \$1,330,680 to watershed planning projects across the state. Over 66 watershed plans have been approved in the state of Indiana. Within the nine county study area of the Central Indiana Green Infrastructure Network 16 plans have been approved.

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Maintaining and improving water quality is crucial if these resources are to continue to provide opportunities for fishing, boating as well as habitat for wildlife. The Central Indiana Green Infrastructure Network will help strengthen future proposals to IDEM for watershed plans by providing useful natural resource information, demonstrating the active interest of a broad range of stakeholders and providing a regional vision for conservation. In states such as Michigan, funding allocated to implement watershed plans has been used to purchase conservation easements and fund buffer strips along sensitive rivers and streams. The Central Indiana Green Infrastructure Network could assist planners identifying landowners that may benefit from the easement and restoration opportunities made possible with implementation funding.

The Central Indiana Green Infrastructure Network highlights both core wetland areas and core aquatic areas as part of the overall regional network. IDEM, watershed associations and other participants in currently watershed planning efforts can use the The Central Indian Green Infrastructure Network to help locate opportunities for restoration of aquatic resources that will both help improve water quality and provide valuable habitat for sensitive native species. For more information on watershed planning efforts please contact Sky Schelle, Watershed Manager, (317) 234-4094 or by email sschelle@idem.in.gov .

Wetlands Mitigation Banking

A mitigation bank is an entity designed to offset the impacts of major construction projects on wetlands, streams or aquatic resources by buying in advance a key piece of conservation land and selling credits to private parties that must offset impacts. In effect, the conservation land purchase is financed by the required mitigation. These banks allow for mitigation to be more meaningful as the scale of conservation is increased by pooling the funds from several mitigation projects in order to protect a large resource.

Both IDEM and the U.S. Army Corps of Engineers (USACE) are involved with regulating impacts to wetlands and waterways. In approaching the wetland mitigation banking strategy it is important to remember that avoiding wetland impacts and minimizing wetland impacts are the preferred strategies to conserve wetland resources. USACE has been actively using mitigation banks in Indiana since 1990. To date, USACE has approved five wetland mitigation banks across the state (Environmental Law Institute. 2006). The IDEM mitigation bank program began in 2003. IDEM has approved for use one mitigation bank in the state and several mitigation banks are under review within the nine county study area of the Central Indiana Green Infrastructure Network. Land trusts and conservation organizations such as TCF have operated wetland mitigation banks, as a method to conserve a significant wetland resource using the funding provided as compensation for unavoidable wetland impacts from transportation projects and other large scale development projects. The highlighted wetland core areas and wetland hubs that are currently unprotected may make for good candidates as mitigation banks. For more information about wetlands mitigation banks in Indiana, contact James Robb at (317) 233-8802 or by e-mail at jrobb@idem.in.gov.

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Indiana Finance Authority

State Revolving Fund for Nonpoint Source Incentive Program

The Indiana Finance Authority operates the State Revolving Fund (SRF) that provides low-interest loans to communities to improve water quality and drinking water infrastructure. SRF loans are also available for nonpoint source projects including: wetlands protection and restoration, riparian buffers and the purchase of conservation easements and best management practices for addressing agriculture and stormwater runoff. Cities, towns, counties, regional sewer/water districts, conservancy districts and water authorities are eligible for wastewater, drinking water and nonpoint source SRF Loan Program financing.

Since the beginning of the incentive program for nonpoint source reduction in 2004, the state of Indiana has dedicated \$120 million through SRF loans to correct NPS problems. Most of the funding has been focused on the removal of failing septic systems. In fact over 6,000 failing septic systems have been removed from service due to funding for sewer connection projects.

Using the Central Indiana Green Infrastructure Network, the Central Indiana Land Trust could orient government partners toward opportunities to reduce nonpoint source pollution in their jurisdictions and support their applications to the SRF for funding nonpoint source restoration projects. Currently, the Indiana SRF has not received any applications for use of their funds for wetland protection, restoration, riparian buffers or the purchase of conservation easements. The Central Indiana Green Infrastructure Network could be used to help target lands for protection using conservation easements funded by the SRF and held by the municipality. The Central Indiana Land Trust could help their government partners make their SRF applications more competitive if they included projects that included some of these nontraditional applications such as riparian buffers or easement purchases.

In some states such as New York, Massachusetts and Ohio, SRF funds are available for nonprofit organizations working on behalf of government partners to purchase land for protecting of water supplies as well as reducing nonpoint source pollution. Land trusts bring important expertise to the table and help municipalities by providing technical assistance in land conservation, real estate, and stewardship. The Central Indiana Land Trust and the Indiana Land Protection Alliance could work together to bring this alternative funding strategy to the attention of state officials as well as legislators to amend the Indiana SRF to include land trusts as eligible organizations. For more information, contact: Amy Henninger Special Programs Coordinator, (317) 232-6566 or by email at ahenning@ifa.in.gov

As part of the federal stimulus package, Congress has required 20% of the set side for State Revolving Funds to be used for projects that address “green infrastructure, water or energy efficiency improvements and other environmental innovative activities” (Schwartz, 2009). As these are new funding categories for SRF, the Environmental Protection Agency (EPA) is encouraging states to conduct appropriate planning activity to guide the use of the funding. Although EPA definition of green infrastructure includes small scale

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structures such as green roofs, landscape scale ecological planning is showcased in EPA guidance memo. The inclusion of green infrastructure within SRF marks a new level of grey/green infrastructure coordination, collaboration and a sign of the overall maturity of green infrastructure methodology.

Indiana Department of Natural Resources (IN DNR)

Indiana Comprehensive Wildlife Strategy

The Central Indiana Green Infrastructure Network will assist IN DNR in implementing the Indiana Comprehensive Wildlife Strategy (CWS) goal of preserving native biological diversity of the state. By highlighting core areas, hubs and corridors that are derived from native focal species, the Central Indiana Green Infrastructure Network provides a science based linkage between the goals of the statewide CWS and the regional need for the protection of ecological network of parks, natural areas, trails and wildlife corridors. The focus of the Green Infrastructure Network at the landscape level fulfills a need identified for landscape level analysis of wildlife habitat as called for in the Indiana CWS. As the CWS may be used by state officials to evaluate funding decisions for land conservation projects, the Central Indiana Green Infrastructure Network provides additional information for state officials to consider how of a land conservation project highlighted in the network design fulfills the goals of CWS.

Indiana Heritage Trust

The Indiana Department of Natural Resources (IN DNR) operates Indiana Heritage Trust as a grant program – funding proposals from both Divisions within IN DNR and from the public including land trusts and local governments. Funding for the Trust comes from private donations, revenue from the sale of special license plates, and from the Indiana state assembly. The state assembly appropriated one million dollars to the Indiana Heritage Trust during 2008. License plate revenue alone for the calendar year was \$1,471,175.

Within the Trust, there are several accounts for distinct types of projects including acquisition work to support or form new state parks and reservoirs, expand state forests and nature preserves, build greenways networks, and protect historic sites. In 2008 the Indiana Heritage Trust conserved 2,009 acres throughout Indiana. The Heritage Trust Project Committee reviewed and approved the conservation of over 10,000 acres during 2008, with 66 acres located with the nine counties of the Central Indiana Green Infrastructure Network.

As demonstrated by the low acreage figure for the nine county area from 2008, the Heritage Trust grant process is highly competitive. The Central Indiana Green Infrastructure Network can only help improve the chances of a project being selected by providing more robust analysis, additional information on the impact on wildlife species and placing the project in a regional ecological context. State officials and the Heritage Trust Project Committee may find the Central Indiana Green Infrastructure Network a useful tool to help evaluate projects and guide conservation activities within the study area.

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Deadlines for submission of project proposals to the Heritage Trust Project Committee are: February 1, May 1, and August 1. The Project Committee meets at least quarterly to consider project proposals for recommendation to the Trust Committee. Complete project proposal forms and documentation must be delivered to the Indiana Heritage Trust Program Executive Director, 402 W. Washington St., Executive Office, Room W-256, Indianapolis, IN 46204-2748. For more information please contact Rachel McClatchey. Her phone is 317-233-1002 and Email: rmcclatchey@dnr.in.gov

Classified Forest and Wildlands Program

This program is focused on encouraging the voluntary stewardship of woodlands and wildlands by private landowners. Landowners enrolled in the program are eligible for a property tax assessment of \$1 per acre in return for following a professionally written management plan. In addition to the tax incentives, landowners may receive free technical assistance from DNR foresters and wildlife biologists and help in starting the process for green certification of their forest lands. The minimum requirement for program enrollment is 10 acres of forest, wetland, shrubland, and/or grassland.

Within the study area of the Central Indiana Green Infrastructure Network, over 16,000 acres of land are enrolled in the program. The Central Indiana Green Infrastructure Network could be used to help state officials and land trusts locate landowners who might benefit from enrollment in the program and be rewarded for their sound stewardship efforts. For more information contact Brenda Huter, Forest Legacy Coordinator, IN DNR, (317) 232-0142 or email at bhuter@dnr.IN.gov.

Forest Legacy Program (FLP)

FLP is a federal initiative supported by the USDA Forest Service that assists state efforts to protect sensitive forests in private ownership. Indiana designated its Forest Legacy Areas in 1998 and the Division of Forestry of the Indiana Department of Natural Resources is the coordinating agency. The program is designed to promote the conservation of privately owned forest lands based on the acquisition of conservation easements. These conservation easements restrict future development of the property and require that the landowner follow sustainable forestry practices. Because these easements are purchased, the landowner does not receive a tax deduction. The USDA Forest Service provides the funding to acquire the easements, and a state agency is eligible to hold the easement. To target the conservation efforts wisely, the IN DNR outlined six forested areas in the state that support traditional forestry practices such as timber harvesting and have significant public benefits such as ensuring high water quality, providing wildlife habitat, conserving scenic views, having recreational opportunities and protecting historic resources.

Landowners within a designated Forest Legacy Area may apply to have their project considered. Priority is given to land that can be effectively protected and managed. Landowners manage the land by following a forest management plan, which is written to address their specific land management goals. To have a project considered, landowners need to complete an application, which may be obtained from the IN DNR. Applications are accepted all year long however, priority applications are due May 1st. Landowners

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interested in submitting a project are encouraged to consult with a local forester, a IN DNR forester, or other natural resource professionals for guidance. Frequently, landowners will work with a local land trust to complete the application and coordinate the project.

The part of the study area of the Central Indiana Green Infrastructure Network is within the boundaries of the Shawnee Hills-Flatrock Basin that includes all of Monroe, Morgan and Brown counties as well as parts of Johnson, Bartholomew, Jackson, Lawrence, Greece and Owen counties. The Forest Legacy Program is a natural fit for the region, with its well-established forest products industry and the amount of high-quality forestland in private ownership. Over 6,000 acres have been protected in the Shawnee Hills-Flatrock Basin. Forest Legacy areas use a mixture of conservation easements and full fee acquisition. Over 90% of the forest legacy projects undertaken have been completed in this focus area, representing a total investment of over \$8 million.

Land trusts have been active participants in these projects. In fact, for the Hurricane Hills project which involved the conservation of 1,351 acres in Morgan County financial contributions were made by the Central Indiana Land Trust, Sycamore Land Trust, and The Nature Conservancy. The future looks bright for the Forest Legacy program with another 2,242 acres having been approved and funded for conservation. Using the Central Indiana Green Infrastructure Network, additional lands and landowners can be identified and pro-actively approached and provided with information on this innovative program. For more information contact Brenda Huter, Forest Legacy Coordinator, IN DNR, (317) 232-0142 or email at bhuter@dnr.IN.gov .

Lake And River Enhancement (LARE) Program

To improve water quality the IDNR launched the LARE program to provide funding and technical assistances to support projects to reduce nonpoint source pollution. LARE funding is obtained by an annual fee charged to boat owners. The program on average has provided over \$1,000,000 in grants and cost share assistance to projects that impact over half of the counties in the state.

Last year LARE funded three projects within the nine county region of the Central Indiana Green Infrastructure Network including the Morse Reservoir Strategic Management Plan, the Geist Reservoir Strategic Management Plan and the Eagle Creek Watershed Land Treatment proposal. Aquatic core areas and hubs are a high priority for the Central Indiana Green Infrastructure Network. As rivers and streams also serve as corridors for many wildlife species, protecting these resources and undertaking restoration efforts is a major priority of the Central Indiana Green Infrastructure Network. The proposed network may help both state officials and applicants to the LARE, target their work on high priority streams and water bodies.

Hoosiers on the Move: The Indiana State Trails, Greenways and Bikeways Plan

The state trails and greenways plan is a joint project between the Indiana Department of Natural Resources and the Indiana Department of Transportation. The main vision behind

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Indiana's state trails plan is to provide trail opportunities to all Indiana residents within 15 minutes or within 7.5 miles by the 2016. The state plan encourages collaboration with non-state entities to acquire and manage these trails. The state plan boldly has adopted a strategy of calling for both increased funding for trails as well as increased acquisition of land for trails. In addition, the plan urges that organization include trails in land use planning reviews and renegotiation of road right of ways and bridge developments and finally developer set asides. According to the Hoosier Rail to Trail Council there are 176 miles of rail to trail open in the state of Indiana.

The corridors highlighted by the Central Indiana Green Infrastructure Network will help achieve the state trail plan goal establishing trails and greenways within a reasonable distance to every citizen of Indiana. Linking Indiana with its surrounding states using ecological based corridors will have benefits for identifying and supporting multi-state trail opportunities. If fully implemented, an intact green infrastructure network will bring economic benefits associated with a reputation as location with a high quality of life.

Collaborate with Transportation Agencies

Both the Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT) are moving toward a collaborative approach to infrastructure planning by consulting up front with state and local agencies responsible for land use management and natural resources during both long-range and project level planning processes. The Central Indiana Green Infrastructure Network can help inform transportation plans and assist transportation agencies in meeting federal guidelines (under new SAFETEA-LU planning requirements contained in section 6001) for consultation, use of natural resource inventories and consideration of environmental mitigation. The regional vision proposed by the Central Indiana Green Infrastructure Network is exactly the type of information that transportation agencies currently seek as part of their requirements to identify potential mitigation areas as part of the long-range planning process and as part of the "Planning and Environmental Linkages" (PEL) approach espoused by FHWA.

To have the most impact, local officials need to formally submit the Central Indiana Green Infrastructure Network to INDOT staff for planning purposes. INDOT may consult the green infrastructure network when undertaking regional projects during the preliminary stages, even before the project is submitted for review under regulatory drivers such as the National Environmental Policy Act (NEPA). With the Central Indiana Green Infrastructure Network, the county and municipalities will be well prepared to participate in planning activities with transportation agencies. When a transportation project is formally launched, local officials and interests groups need to attend the formal public meetings and cite the Central Indian Green Infrastructure Network in their comments. Using the Central Indian Green Infrastructure Network in the public participation process will help all parties craft integrated solutions to meet transportation and environmental needs.

Moreover, both the federal and state transportation agencies operate scenic byway programs that are highly successful methods of attracting visitors to a region. The Central

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Indian Green Infrastructure Network can provide valuable information to the planning process in the delineation of a national or state scenic byway corridor study. For more information on working with the Indiana Department of Transportation please contact Jennette Wilson, INDOT Transportation Enhancement Coordinator, 317-232-5496 and by email jwilson@indot.in.gov .

Indiana Department of Agriculture Conservation Reserve Enhancement Program (CREP)

CREP is a joint program of USDA and the state of Indiana that focuses government funding to private landowners of agricultural lands who agree to manage and restore habitat for wildlife. The landowners are required to enroll their land in a 14 to 15 year contract with USDA and engage in specific environmental stewardship practices such as replanting an area with native warm season grasses or planting native hardwoods and restoring wetlands.

In Indiana only landowners that are within a designated watershed eligible to apply for support from CREP. The Upper White River Watershed is designated watershed and includes the following counties from the Central Indian Green Infrastructure Network study area: Hendricks, Marion, Boone, Hamilton, Hancock and Madison. As of December 2008, CREP had 207 contracts with landowners, leveraging \$4 million in Federal funding. Over 990 acres is enrolled by landowners in Boone, Hamilton and Madison counties, accounting for 64% of the total acreage enrolled in CREP for the Upper White River Watershed. As the NRCS has recognized the value of focusing its conservation efforts with a watershed approach, the Central Indiana Green Infrastructure Network could also assist state and federal officials in prioritizing their limited financial resources. In particular, there are sound conservation opportunities in Morgan county within of the Central Indian Green Infrastructure Network that would benefit from participation in the CREP program. For more information on CREP contact Division Director, Tammy Lawson, 317-517-7528, email tlawson@isda.in.gov .

Clean Water Indiana Grants

In 2008 the State Soil and Conservation Board awarded more than \$200,000 in Sediment and Nutrient Reduction Grants (SNRGs) to 23 Soil and Water Conservation Districts from around the state. Grant awards ranged from \$3,000 to \$10,000. Applications are due each year in September. While there were no grant awards to counties within the Central Indian Green Infrastructure Network in 2008, the grant program may be a future source of funding to help protect aquatic and wetland resources. For more information contact Amy Eizinger, Grant Coordinator at AEizinger@isda.in.gov .

LOCAL ACTION SECTION

Incorporate Green Infrastructure in Local Planning

When updating municipal and regional comprehensive plans as well as parks and recreational plans, local governments can utilize the Central Indiana Green Infrastructure Network as an inventory of important ecological areas, recreational and cultural assets. Updates to local plans may use the Green InfrastructureNetwork maps to strengthen

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policies on floodplain management, protect natural resources, and help with site plan review.

The authority to engage in land use planning is primarily traced to police powers to ensure and promote public safety. Municipal plan updates and periodic re-evaluation of local floodplain ordinances are crucial opportunities to improve public safety by examining the allowable land uses within floodplains, the use of buffers in sensitive areas and incorporating performance standards. As highlighted early under the FEMA section, community participation in the Community Rating System and the resulting planning efforts can help achieve reductions in flood damage as well as premiums paid by residents. Communities can use the Central Indian Green Infrastructure Network to help prepare a planning documents associated with CRS. By taking care of our Green Infrastructure with actions such as planting vegetated buffers along stream banks, we help reduce the impact of flood events and protect our grey infrastructure at the same time.

One of the goals of the green infrastructure approach is to help shape the growth of communities. Environmentally sensitive development is a process by which land that is slated for development is first inventoried for significant natural features and environmental constraints such as steep slopes. Those sensitive areas are set aside at the beginning of the development process, before lot lines or other steps in the development process are followed. By avoiding wetlands, minimizing stream crossings and other impacts, the cost of built infrastructure such as roads and permitting costs may be reduced. The remaining land is known as the “development envelope.” Next, add in the allowable number of houses permitted by municipal regulation, and then site the roads and other infrastructure to serve those homes.

By following an environmentally sensitive process of development, and using land wisely, the land that is developed will be more compatible with its surrounding green infrastructure. As this process is voluntary and is a different approach to development, starting with a demonstration project, either residential or commercial, would be advisable. A demonstration project provides an on-the-ground site that interested parties can visit, and development costs and revenue can be documented.

Local Funding Options

According to the Trust for Public Land’s Land Vote database, Indiana is one of four states to have never had a state, county or municipal bond or tax measure adopted for land conservation. For 2008 nationally, over 90 funding measures were adopted raising an estimated \$9 billion for land conservation, farmland preservation, greenways and trails and drinking water supply protection. Public support for bonds, dedicated sale taxes and property taxes to support conservation has been historically extremely strong across the country. Tapping the strong public support for conservation through a local bond initiative would provide much needed resources. Keys to success are clearly connecting fund requests to projects that serve a range of easily understood public benefits and are within communities with thoughtful leadership.

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A similar vehicle that may provide additional resources is the application of a county innkeepers tax. These taxes are paid by guests, mostly out of town guests, at hotels, inns and motels and typically are dedicated to support the county's tourism efforts. In Indiana, 67 counties have an innkeepers tax and over \$75 million was raised statewide for 2008. Most communities use the revenue to generally promote tourism, however, counties can dedicate some or all of the funds for specific activities. For example, White County used its funding for the stewardship of lakes within the county. Seven of the counties within the study area of the Central Indian Green Infrastructure Network have adopted the tax, ranging from 4% to 9% of the cost of lodging. Currently, Hendricks County includes authorization language that funds from the tax may be used for the development of a county park.

Visitors are drawn to communities that have parks, trails and wonderful landscapes. Dedicating a portion of the innkeepers tax to support green infrastructure is in keeping with the goal of promoting the community and increasing tourism. In 2009 both Jefferson County and Morgan County attempted to have innkeeper taxes dedicated to support parks and recreation projects but failed to receive the necessary legislative support for approval. Working with county officials to support the use of the innkeepers tax to assist with green infrastructure projects could provide much needed resources for green infrastructure.

Increase Collaboration with County Drainage Boards

Throughout the Midwest, county drainage boards and local surveyors oversee a vast network of agricultural drainage ditches. The origin of this grey infrastructure network of ditches was to move the water as quickly as possible off the farm land to allow for improved soil aeration, minimize plant stress and improve crop yields. In Indiana, once a drainage board approves the classification of a stream or creek as a regulated drain, the board has an easement that allows for a right of entry to maintain the ditch within a 75 foot buffer on either side of creek. Although management regimes for regulated drains can vary, drainage boards can authorize the clearing of vegetation with the 75 foot buffer.

Ecologically, creeks and streams function best with vegetated buffers that help trap sediment and nutrients such as phosphorus and nitrogen. Vegetated buffers also slow the rate of runoff and help prevent flash floods downstream. With the removal of vegetation along creeks, erosion is increased, removing precious topsoil, increasing the instability of the bank and requiring additional maintenance. Trees and shrubs often provide shade to creeks, cooling the water temperature and increasing oxygen levels that promote a healthy ecosystem for native aquatic species. The extensive clearing associated with regulated drains has a significant impact on the ability of streams and creeks to serve as core areas of wildlife habitat as well as function as corridors for wildlife movement.

For the implementation of the Central Indian Green Infrastructure Network one of the most significant efforts will be working with Drainage Boards and the County Surveyors on new management techniques for the draining network. One potential method is the two stage drain developed by The Nature Conservancy. Typically a two stage drain has a low flow central channel and then a slightly elevated bench which functions as a mini-floodplain. The benches are typically covered with grasses that provide shade, cooling

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water temperatures. During high flow events, grasses on the benches capture sediment and pollutants, improving water quality. A vegetated stream bank has a root system that holds the soil, reduces erosion and reduces overall maintenance cost to the Drainage Commission as well as landowners.

Currently, TNC has undertaken significant studies of the installation of two stage drains in Indiana, Michigan and Ohio. The NRCS supports the installation of two stage drains as part of their Environmental Quality Incentive Program (EQIP) in select counties. If a landowner is in a target county, they may be eligible for \$6/ft Environmental Quality Incentive Program (EQIP) payments. These are priority EQIP contracts through a Cooperative Conservation Partnership Initiative (CCPI) grant. The Central Indian Green Infrastructure Network could be used a tool to help target the installation of two stage drains for significant headwaters and 1st and 2nd order streams that are currently classified as regulated drains. For more information about two stage drains please contact Joe Draper, Indiana TNC by phone at 260-665-9141 or by email jdraper@tnc.org.

PRIVATE PROGRAMS SECTION

Working with Indiana University and other Educational Institutes

Colleges and universities are significant landowners of property with conservation value. Indiana University (IU) owns close to 5,000 acres of land outside of its core campus land holdings for its eight campuses across the state¹. Of this off core campus lands total, over 2,500 acres is accounted for by Bradford Woods, which is used as an outdoor education and retreat center. Many of the school children of the central Indiana get their first experience with the natural world as part of a school visit or overnight camping trip to Bradford Woods. The Central Indiana Land Trust and other conservation groups could work with the staff of Bradford Wood and the administration of IU on the management of Bradford Woods for future generations as well as on securing the protection of lands surrounding the facility. There are several options for collaboration partnerships between the Central Indian Land Trust and IU.

The Central Indiana Land Trust can use the Central Indian Green Infrastructure Network to identify lands that have ecological benefit in being linked with Bradford Woods or protecting key buffer lands to the core areas of the woods. The Central Indiana Land Trust could approach these landowners to provide information about various programs that help landowners with the stewardship of their property as well as highlight the benefits of longer conservation tools such as conservation easements.

On a boarder level of collaboration, the Central Indiana Land Trust could work with IU to bring in new gifts for the benefit of both organizations and the environment. Many university alumni have conservation and general charitable interests; however they may be uneasy in dealing with a university as these institutions tend to sell real estate that is

¹¹ Indiana University Fact Book 2008-2009, 2008, Real Estate Acreage, p. 81.
http://www.indiana.edu/~upira/reports/standard/doc/fact%20book/fact_book_0809.pdf

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donated to them as a way of raising funds, regardless of the intend of the donor. The Central Indiana Land Trust can help a university reach these skeptical landowners by ensuring a conservation outcome for their property. The Central Indiana Land Trust would benefit from working with the development office of a university because of the technical skills of the staff in crafting planned giving arrangements, such as a charitable remainder trust and a charitable gift annuity. In addition, in order for a charity to undertake a charitable remainder trust or gift annuity, many state agency regulatory authorities require that the charity have sufficient liquid reserves, which is another area where a university development office can be helpful.

Here is one hypothetical scenario. The IU development office advertises in the University's alumni magazine that it will accept gifts of land, with or without residential development, to be preserved by a conservation easement held by the Central Indiana Land Trust. The landowner alumnus contacts the land trust to see if the property is of interest to the Central Indiana Land Trust as part of the Central Indian Green Infrastructure Network and if so, they negotiate a standard conservation easement which is donated to the land trust. IU sets up a charitable remainder trust for the landowner. Next, the landowner gives the restricted land to the charitable trust. The trust sells the property; the proceeds provide an income to the former landowner for either a fixed period of time or their life time. The annuity paid to the landowner is based on a percentage of the value of the gift of land and is calculated to ensure that some of the funds from the sale proceeds remain in the trust. The landowner may be eligible for a tax deduction for both the gift of the easement to the Central Indiana Land Trust and the gift of the property to the charitable trust. Capital gains taxes are avoided when the charitable trust sells the property. The funds left in the trust after the passing of the donor are then distributed to the donor's charity of choice, which in this scenario would be the University. As these deals can be complex and the tax laws are always changing, it is important for both the landowner and land trust to have the assistance of a tax professional and legal counsel.

Preservation Pilsner

The Upland Brewing Company, located in Bloomington, Indiana has created a special draft beer, Preservation Pilsner, as an approach to show support for land conservation. The brewing company donates 10% of the profits from the sales of Preservation Pilsner to local community groups that work on land conservation, preservation of family farms and the protection of forest lands. The Central Indiana Land Trust has hosted events featuring Preservation Pilsners and a local restaurant, Chumley's features the beer on tap.

This innovative blend of commerce and conscience, is exactly the type of approach for Central Indiana Land Trust to follow in fund raising for implementation of the Central Indian Green Infrastructure Network. Financial support for land conservation and the implementation of the Central Indian Green Infrastructure Network will come through the enterprise and initiative of the private sector, the nonprofit sector and the creative use of existing government programs.

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Land Trust Loan Program

With the lead support of the Peter Jay Sharp Foundation, The Conservation Fund launched the nation's only land trust loan program—creating a powerful partnership between a national conservation nonprofit and the many local organizations with a similar purpose. Each year, the Fund provides 15 percent of its conservation capital base to land trusts as bridge financing, enabling the groups to acquire properties immediately, but raise funds over time. Over the past 15 years, the Fund has helped land trusts protect nearly 87,000 acres valued at more than \$150 million. In 2008, the loan program had its most successful year ever, making 21 loans valued at \$14 million.

Perhaps the most impressive figure for the program is that it has never had a default on a loan to a land trust. Unlike loans from commercial Bank, the Fund is a full service provider that seeks to help the land trust succeed in all stages of the transaction. The Fund can provide technical expertise to assistant land trust's with complex real estate negotiations, fund raising for the transaction and other items of support. This holistic approach helps build stronger land trusts while protecting important lands for future generations. For more information contact Reggie Hall at (703)-908-5825 or email at rhall@conservationfund.org.

Racing for Wildlife

The Conservation Fund and NASCAR driver Ryan Newman, through the Ryan Newman Foundation, with inaugural support from Michigan International Speedway, are leading the effort to preserve some of the special natural places across the country and are turning to the millions of Americans who love NASCAR and the outdoors to help. Each year, Racing for Wildlife pursues a new conservation project that offers recreational opportunities near urban areas, so families can easily enjoy these protected places. In selecting conservation projects, Racing for Wildlife works with wildlife management agencies and local land conservation groups to find opportunities that fulfill state-recognized conservation priorities while inviting a new generation to experience the outdoors.

The Indianapolis Motor Speedway is one of the most famous race tracks in the world. Also many NASCAR drivers hail from Indiana and have strong interests in promoting an active outdoor life style. As part of the Racing for Wildlife strategy relies on working with local race tracks and drivers, the opportunity to connect the priorities highlighted by the Central Indian Green Infrastructure Network with Racing for Wildlife program may be a significant opportunity in the future. For more information contact Rex Boner at (770) 414-9211 or email rrboner@aol.com.

Strategic Approach to Local and Regional Foundations

Land conservation efforts have historically drawn strong Foundation support. The Central Indian Green Infrastructure Network holds out the promise to help increase the level of support from foundations as it provides a clear vision for conservation. At times foundations are reluctant to fund land acquisition as in the words of one program officer, “land conservation seems like a black hole since there is never ending supply of potential real estate deals to be funded”. With a green infrastructure network, a land trust or other

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organization can show a foundation that there is an end in sight, there are a limited number of parcels for acquisition and once the network is complete, the job is done. For the Central Indian Green Infrastructure Network the strongest foundation supporters will most likely be foundations focused on the geography of central Indiana. These funders have an investment in the region and will see the Central Indian Green Infrastructure Network as a way to protect and enhance that investment. Finally, foundations prefer to support efforts that are in the context of an overall framework instead of an opportunistic approach resulting in scattered projects with no common theme or connection.

Local foundations such as the Central Indiana Community Foundation and the Nina Mason Pulliam Charitable Trust are significant contributors to land conservation projects. Defining the role that local and regional foundations can play in green infrastructure networks and leveraging their support with other private and public funds will be crucial.

Kodak American Greenways Grant Program

Eastman Kodak, The Conservation Fund, and the National Geographic Society provide small grants to stimulate the planning and design of greenways in communities throughout America. Grant monies may be used for projects such as mapping, surveying, signage and interpretive displays, bike paths and other structures. Awards are made to local, regional, and statewide nonprofit organizations, and public agencies may also apply for funding. The maximum grant size is \$2,500 with applications due on June 30th. These grants may be helpful for the Central Indian Green Infrastructure Network by contributing as matches for larger grant packets or for modest improvements such as improving signage for boat ramps or trails. TCF has awarded four greenways grants for projects in Indiana for a total of \$4,000. Projects ranged from funding interpretive signage along trails to purchasing supplies and rental equipment for construction of footbridge. For more information, contact The Conservation Fund via email at kodakawards@conservationfund.org.

Outdoor Sports Store Grant Programs

LL Bean operate small grant programs to help with basic recreational infrastructure needs such as signs for boat ramps or trails, equipment purchases, stewardship needs for paddle trails, and funding to leverage the work of volunteer crews. LL Bean has partnered with the American Canoe Association to award grants up to \$1,000 to canoe and kayak clubs to help protect and improve the stewardship needs of local waterways. The Club Fostered Stewardship Program aims at helping local clubs tackle difficult problems such as removing in-stream safety hazards, maintaining access areas and providing sanitary facilities. While the grant size is modest, these funds can be used as matching funds, to demonstrate broad support, and to raise public awareness.

Carbon Sequestration

Carbon sequestration is the process through which agricultural and forestry practices remove carbon dioxide (CO₂) from the atmosphere. It is increasingly likely that in the near future the United States will make a concerted effort to reduce its emissions of carbon in an effort to address the issue of climate change. The approach that many U.S. policy makers favor relies on market forces to provide incentives to companies that emit

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global warming gases such as carbon dioxide to buy carbon credits from organizations that are engaged in certified reforestation programs. The Fund manages several properties for their ability to sequester carbon and has sold carbon credits to companies interested in offsetting their emissions. For additional information, contact John Rogers, Carbon Sequestration Program Director, TCF, at 919-967-2223, or by email at jr_tcf@bellsouth.net.

Small landowners now have the opportunity to earn environmental credits that can be sold on the [Chicago Climate Exchange \(CCX\)](#) by sequestering carbon on their forestlands. To participate, landowners should contact CCX directly or work with an approved carbon [aggregator](#). An aggregator is a company that pools small forestlands so that the carbon credits can be sold on the open market. There is a multi-step process that landowners will need to go through when working with an aggregator or an associate aggregator.

In addition to forest lands, CCX operates an offset credit program for agricultural carbon emission reduction and soil sequestration. As with the forest program, a farmer should contact CCX directly or work with an approved carbon aggregator. A farmer would engage in a contract for a minimum of five years and commit to the adoption of no till practices or strip till on the enrolled acreage. Tillage practices must leave at least two thirds of the soil surface undisturbed and at least two thirds of the residue remaining on the field surface. In exchange for these management practices the farmer receives an annual payment of between 0.2 to 0.6 metric tons of CO₂ per acre year. Prices have ranged from below \$1 to above \$5 per metric ton. In Indiana the current rate is 0.6 metrics tons of CO₂ per acre year. As with any business transaction, landowners of forest land or farm land need to shop around for the best deal and service available, and fully understand the terms of the contract they will be required to sign.

The Central Indian Green Infrastructure Network can be used to help direct outreach activities to landowners within hubs and corridors that might benefit from the management practices highlighted for forests and farmland for carbon sequestration. By helping improve the stewardship of the working landscapes, other environmental and social benefits will accrue. For example no till practices may help reduce soil erosion and sediment runoff and thereby improve water quality. The Central Indiana Land Trust and other partners can help make landowners aware of the options and incentives to reward them for sound stewardship while keeping the land in private ownership.

Another approach taken by TCF is the Go Zero program that matches funds from individuals and companies that want to offset their carbon footprint with lands that would benefit from reforestation. Many of the reforestation projects are completed in partnership with state or federal conservation agencies. By partnering with a public agency such as the US Fish and Wildlife Service, the long term stewardship of the replanted area is more secure because the additional forest cover provides critical wildlife habitat and funding is saved for the agency partner. For the Central Indian Green Infrastructure Network, the opportunities to work with public resource agencies may help with the restoration of corridors as well as enhance areas that were once forested through

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other restoration efforts. For more information on the Go Zero Program, contact Jena Meredith at jthompson@conservationfund.org.

Nutrient Farming

According to the Environmental Protection Agency (EPA), nitrogen and phosphorus pollution is the leading cause of water quality impairments in the US (EPA 2008). Elevated levels of nitrogen and phosphorus have been linked to harmful algal blooms, reduced spawning grounds, fish kills and the spread of oxygen-starved hypoxic “dead zones” in the Gulf of Mexico where aquatic life can no longer survive. One of the major sources of these increased levels of nitrogen and phosphorus can be traced to many agricultural practices such as the use of nitrogen based fertilizers. EPA has encouraged states to adopt strict levels for nitrogen and phosphorus. As more states establish firm approaches to reduce nutrient pollution levels, a potential market will be created for methods that achieve reduction in nutrient levels with modest costs.

One approach to reduce nutrient levels is known as “nutrient farming” – which is the strategy of using restored wetlands to remove excess nutrients from the water. The farmer, in this case, is the landowner who restores the wetlands, captures the excess nitrogen by anaerobic biological process led by microbial communities present in wetlands that extracts the nitrogen, releasing it as a gas. The purchasers of nutrient credits would be waste water treatment plants that will be facing new regulatory requirements to remove nutrients as an approach to improving water quality. These treatment plants could remove nutrients with additional man-made structures, however, in many cases this will prove very costly and hence it will be more cost effective to allow wetlands to perform this ecosystem service. A recent study comparing costs of conventional wastewater treatment plants with the costs from wetlands for removing nutrients found that the cost of constructing and maintaining wetlands was over 50% less than the conventional treatment option (Hey et al. 2005). The financial incentives for farmers to restore wetlands for nutrient farming are potentially quite high. One study estimated that the combined revenue for phosphorus and nitrogen farming could amount to \$353 per acre per year, in comparison with compensation for corn at \$83 per acre per year and soybeans at \$110 per acre per year (Wetlands Initiative, 2008).

For the Central Indian Green Infrastructure Network, nutrient farming is a longer term strategy that could benefit from the establishment of robust pollution credit markets, changes in state regulatory policy and the incorporation of lessons learned from pilot projects. The Wetlands Initiative is in the process of launching a demonstration project in Illinois that will help planners and landowners understand the full costs and benefits of such an enterprise. For more information about nutrient farm please contact Laura S. Urban, Wetlands Initiative, (312) 922-0777, email lurban@wetlands-initiative.org

Student Support

The implementation of the Central Indian Green Infrastructure Network will require many hours of on-the-ground work. Some of this work can be completed through the use of support groups that provide students for well-defined projects in exchange for work experience and living allowance. For example, the Student Conservation Association

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(SCA) provides student interns in over 50 disciplines to federal agencies such as USDA Forest Service to work on research projects, wildlife management, environmental education and mapping services. The internship can last from three months to one year. SCA and the host agency provide students with funds to meet basic expenses of food and lodging. For the Central Indiana GI Network, student interns could be involved in building/maintaining trails, restoring stream corridors and wetlands.

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