

APPENDIX X

LOCUST CREEK HEALTHY WATERSHED INITIATIVE

Locust Creek Healthy Watershed Initiative

July 1, 2010 – September 30, 2014

**Project proposal and request for financial assistance through the
MRBI Cooperative Conservation Partners Initiative**



**A cooperative watershed project in the
Lower Grand River Focus Area (8-digit HUC 10280103)**

Including 12-digit HUCs:

**102801030601, 102801030602, 102801030603, 102801030705, 102801030706, 102801030801,
102801030802, 102801030803, 102801030901, 102801030902, 102801030903, and 102801030904**

**In the counties of Linn, Sullivan, Putnam, Chariton, and Livingston
State of Missouri
6th Congressional District**

Sponsored by the

Linn and Sullivan Counties Soil and Water Conservation Districts

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Introduction

The Locust Creek Healthy Watershed Initiative is a collaborative effort between multiple federal, state, and local agencies and organizations involved in agricultural, natural resource management, and environmental protection. The foremost goal of the proposed initiative is to concentrate ongoing stakeholder efforts to implement wise soil and nutrient management, protect critical plant and wildlife habitat, and facilitate sustainable agricultural production in the Locust Creek and greater Mississippi River basins. It is believed that dedicated financial assistance through MRBI-CCPI will accelerate technical assistance and installation of conservation practices that address important regional aquatic resource concerns, in addition to those in the Gulf of Mexico. Funding of the Locust Creek Healthy Watershed Initiative brings added value to existing watershed partnerships.

Thorough evaluation of current and historical data guided sponsoring partners in selecting twelve HUC-12 watersheds for the project area, which comprise the center of the MRBI Lower Grand River Focus Area in north central Missouri (HUC-8 10280103), Figure 1: Headwaters East Locust Creek (102801030601), Little East Locust Creek (102801030602), East Locust Creek (102801030603), Rooks Branch-Locust Creek (102801030705), Community of Reger-Locust Creek (102801030706), Upper West Locust Creek (102801030801), Middle West Locust Creek (102801030802), Lower West Locust Creek (102801030803), Lowes Branch-Locust Creek (102801030901), Muddy Creek (102801030902), Kemper Branch-Locust Creek (102801030903), and Locust Creek (102801030904). Collectively, these will be referred to in this proposal as the "project area", Figure 1. The entire proposed project area encompasses 311,667 acres spanning a portion of five north central Missouri counties (Linn, Sullivan, Chariton, Livingston, and Putnam), with nearly 12,000 acres classified as wetland, and over 1,437 miles of perennial streams.

This initiative specifically aims to reduce nutrient and sediment runoff from agricultural fields that are contributing to local and national water quality problems. This project will assist to satisfy current agency and partner organization strategic guidance as well as work plans, action items, watershed management plans, and Total Maximum Daily Load (TMDL) plans that have previously been developed. Our goal is to leverage MRBI funds with dedicated state and local resources in order to: accelerate conservation efforts to improve water quality; maintain agricultural productivity; improve wildlife habitat; and protect, enhance, and restore critical natural communities such as wetlands. Critical HUC-12 watersheds within the project area have been identified from compiled data and will be targeted more intensely for application of these conservation practices. As outlined later in this proposal, nutrient and sediment loads will be monitored at the Tier 1, 2, and 3 watershed scales and modeling approaches will be conducted to document the success of the project. Existing partnerships will help ensure the success of this project.

Current Project Partners

This proposal is co-sponsored by the Linn and Sullivan Counties Soil and Water Conservation Districts under the direction of Trevor Stillwell, who will serve as the project director. Additional project partners are continually being sought. At the time of this proposal, crucial project partners include the following organizations: Linn, Sullivan, Putnam, Livingston, and Chariton Counties Soil and Water Conservation Districts (SWCDs), Linn, Sullivan, Putnam, Livingston, and Chariton Counties Natural Resource Conservation Service (NRCS), Green Hills Resource Conservation and Development Council (RC&D), Missouri Department of Natural Resources (MDNR), Missouri Department of Conservation (MDC), U.S. Geological Survey (USGS), and Missouri Stream Teams #3113 and #3625.

Supporting project partners include: The Honorable Kit Bond, The Honorable Sam Graves, The Honorable Tom Shively, The Honorable Brad Lager, Missouri Farm Bureau, Linn County Farm Bureau, The Missouri Association of Soil and Water Conservation Districts (MASWCD), The Conservation Fund,

U.S. Fish and Wildlife Service (USFWS), Ducks Unlimited, Locust Creek Levee District, University of Missouri Extension (UOE), Missouri Farmers Association (MFA), Missouri Soybean Association, Conservation Federation of Missouri, National Wild Turkey Federation, Missouri Prairie Foundation, The Nature Conservancy, Grand River Audubon Society, North Central Missouri Regional Water Commission, and the City of Milan. A complete list of project partners and copies of their letters of support or commitment are available upon request.

A committee of representatives from partnering organizations has been organized to formulate this proposal and direct activities of the initiative. It is expected that this group will meet quarterly (or more often as needed) to monitor progress and prepare regular updates, including project reports for entities providing financial support. In addition, this committee will develop strategies to promote available programs of the initiative, execute monitoring and modeling efforts, and conduct outreach and education to potential applicants.

Watershed Overview and Natural Resource Concerns

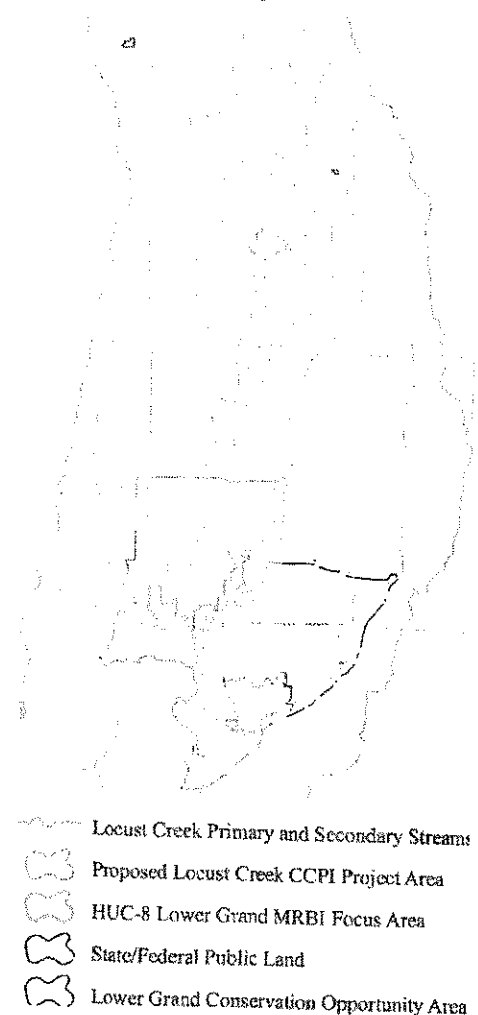
The Locust Creek watershed contains an astounding diversity of natural features, including soils, water resources, topography, and exceptional examples of rare and declining plant and animal communities. Land cover within the project area is approximately 56% grassland, 21% woodland, and 14% cropland, encompassing remnant native prairies, bottomland hardwoods and riparian areas, unique un-channelized stream segments, and assorted wetlands and wet prairies.

Distinctive natural features in the Locust Creek basin can be attributed in part to the extremes of natural resource characteristics and climatic conditions experienced in the region. The long-term mean annual precipitation in the watershed is 36-39 inches with most of the precipitation falling between April and November in the form of high intensity, short duration rainfall events. Average annual precipitation can vary significantly from year to year, ranging from the low 30's during dry periods to upper 50's (inches/year) during the significant wet period of 2008-2009. The topography of the project area is equally diverse with slopes ranging from 0% to greater than 20%. In general, the southern portion of the project area is relatively flat, with slopes typically 0-3% on bottomland soils and low ridge tops and 3-6% on side slopes. Slopes along the primary streams throughout the entire project area fall within this range. In the remainder of the basin, extensive dissection results in slopes that generally exceed 6%, with a significant amount of the upper watershed above 10%. The predominate soil types within the watershed are clay loams in the uplands and loams in the bottomlands. Soil infiltration rates in the project area range from moderate to very slow.

Four major natural resource landholdings in the area attest to the quality and importance of the entire Locust Creek watershed:

- Fountain Grove Conservation Area, Missouri Department of Conservation
- Locust Creek Conservation Area, Missouri Department of Conservation

Figure 1.



- Pershing State Park, Missouri Department of Natural Resources
- Swan Lake National Wildlife Refuge, USFWS, see Figure 1

These state and federally owned public use areas, managed by project partners, play a critical role in protecting and maintaining regionally and nationally significant terrestrial and aquatic resources, Figure 1.

Of note, Pershing State Park in Linn County features the largest complex of natural bottomland wetlands remaining in northern Missouri (Currier 1992). The wetland complex contains numerous species of concern including the federally listed Massasaugua Rattlesnake and Indiana Bat. Fish samples from Pershing State Park were considered regionally outstanding and included two state listed species, Flat floater mussels and Trout-perch (Winston et al. 1998). The Park also contains the state listed Ostrich Fern among its variety of uncommon plant species. Unfortunately, silt from upstream soil erosion has covered much of the Park's Locust Creek Natural Area to depths exceeding four feet, killing canopy trees and destroying large portions of wet prairie. In addition, an un-channelized reach of Locust Creek in Sullivan County was identified in 1982 by the U.S. National Park Service as having both statewide and national significance (Todd et al. 1994). The aforementioned Locust Creek Conservation Area lies within this high quality stream reach. The state listed Regal Fritillary butterfly is also found within the project area in Sullivan County. As demonstrated in this proposal it is mutually agreed by project partners that soil and water conservation efforts are needed to reduce soil erosion and sedimentation that threatens nationally significant habitats, natural communities, and plant and animal species of concern (MDC, 2005).

A summary of the historical water quality data collected by the USGS, MDNR, Midwest Environmental Consultants, Inc. (MEC), and Versar, Inc. from 1997-2009 in the HUC-8 Lower Grand River watershed is presented in Table 1. Historical stream water quality data were also available and examined for six of the twelve 12-digit HUC watersheds within the project area. Data clearly demonstrates excessive loading of nitrates, total nitrogen, total phosphorus, and total suspended solids in streams comprising the HUC-8 Lower Grand River watershed. Evidence suggests that extremely high nutrient and sediment concentrations are typical in the Lower Grand River basin during storm events, and rural nonpoint sources of runoff from agricultural operations are believed to be responsible. Declining watershed health in the northern portion of the basin has attracted considerable public attention for many years, inspiring local Missouri Stream Teams to voluntarily monitor and test water quality at 38 locations within the project area.

Particularly noteworthy are the elevated nitrate, total nitrogen, and total phosphorus concentrations measured in the HUC-12 East Locust Creek watershed, Table 2. Eight out of twelve of the HUC-12 watersheds in the project area (including East

Table 1. Summary of historical water quality data collected by USGS, MDNR, MEC, and Versar, Inc. from 1997-2009 in streams within the 8-Digit HUC 10280103 Lower Grand Watershed. Extreme values highlighted.

Parameter	Units	# Samples	Mean	SD	Minimum	Maximum	Mean Lbs/Day
Flow	cfs	633	610	3783	0.1	55,000	---
NH ₃ N	mg/l	740	0.09	0.21	0.005	2.46	312
NO ₃ N	mg/l	735	3.90	10.60	0.005	91.7	12,826
TN	mg/l	718	4.87	10.81	0.19	92.7	16,019
TP	mg/l	727	1.62	4.14	0.005	30.9	5,337
TSS	mg/l	441	128	321	1.00	2,420	421,657

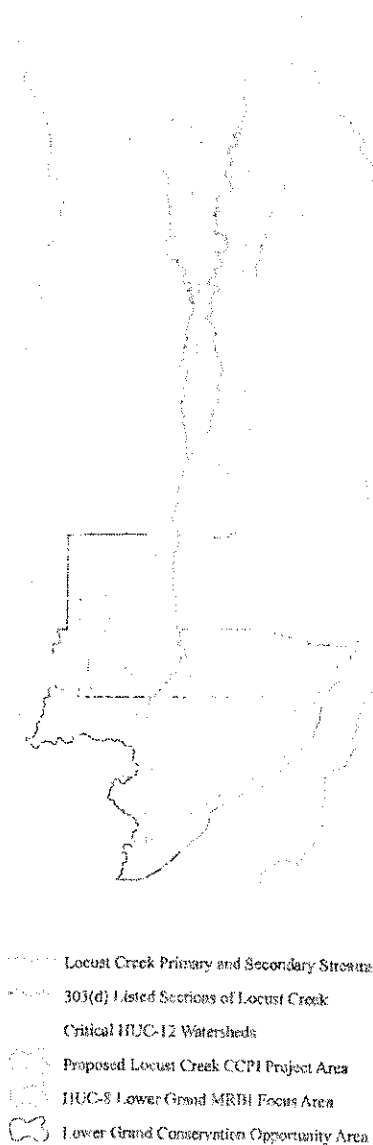
Table 2. Summary of water quality data collected by MDNR and MEC from 2000-2009 in the East Fork Locust Creek within the 12-digit HUC 102801030603 East Locust Creek Watershed. Extreme values highlighted.

Parameter	Units	# Samples	Mean	SD	Minimum	Maximum	Mean Lbs/Day
Flow	cfs	55	22.81	83.25	0.37	600	---
NH ₃ N	mg/l	123	0.21	0.39	0.009	2.46	25.59
NO ₃ N	mg/l	118	22.15	17.38	0.15	91.7	2,726
TN	mg/l	114	23.78	17.38	0.36	92.7	2,926
TP	mg/l	119	8.79	6.52	0.10	30.9	1,081
TSS	mg/l	54	27.21	25.99	2.5	161	3,348

Locust Creek) have been identified on the Missouri 303(d) list. Impairments relate to bacteria, low dissolved oxygen, and other unknown pollutants (2006 data). 303(d) listed stream reaches include nearly 75.7 miles of Locust Creek major, 4.1 miles of East Fork Locust Creek, and 34.6 miles of West Fork Locust Creek.

Assessment of natural resource data in conjunction with existing watershed management plans, 303(d) listed waters, TMDLs, pre-existing surface and ground water quality data, and various modeling efforts have led project partners to identify eight HUC-12 watersheds as critical areas of resource concern within the project area, Figure 2. The following HUC-12 watersheds merit extra focus while marketing core and supporting conservation practices and assigning precedence in program ranking criteria: East Locust Creek (102801030603), Rooks Branch-Locust Creek (102801030705), Community of Reger-Locust Creek (102801030706), Middle West Locust Creek (102801030802), Lower West Locust Creek (102801030803), Lowes Branch-Locust Creek (102801030901), Kemper Branch-Locust Creek (102801030903), and Locust Creek (102801030904). The East Locust Creek watershed specifically will be targeted with increased marketing of conservation programs and outreach efforts.

Figure 2.



Water quality and wildlife habitat in many Mississippi River sub-basins have been degraded by agricultural inputs and practices. Missouri ranks fourth in total N and second in total P in terms of annual flux to the Gulf of Mexico (Alexander et al. 2008). Additionally, Missouri is the second leading state in the number of farms (USDA, 2010) with approximately two-thirds (65 percent) of the land area devoted to agriculture.

Approximately 70% of the land in the designated project area is devoted to some form of agricultural production. The underlying rich prairie soils are known for their high clay content, low infiltration rates, and extreme slopes. Soils found within the Locust Creek basin possess the capacity to achieve high production of annual grain crops, cereal grains, and livestock forage when inherent limitations are addressed. When these limitations are ignored, most of these soils have a moderate to very high potential for transporting contaminants to surface waters; either in solution or bound to mobile soil particles.

Approximately 14% of the project area is cropland while 56% is grassland, much of which is pasture used for livestock production. Various forms of fertilizers (dry, liquid, gaseous, animal waste) and pesticides are applied extensively throughout the watershed. No-tillage of crop land is practiced by advanced producers; however the majority of farmers still implement some form of tillage to address certain management issues during the crop year. Soil and water conservation practices are well received and implemented throughout the project area, but must fit into the management of individual farming operations to be adopted. The majority of livestock producers continuously graze their grassland, although rotational grazing is gradually gaining acceptance. Six confined animal feeding operations (CAFOs) feed approximately 38,000 animals, primarily in the northern portion of the project area. Most agricultural operations arouse multiple resource concerns.

Integrated resource conservation and management systems, designed to maintain agricultural productivity while reducing nutrient transport, will be emphasized in the project area. Such an approach is especially

important since more than 75 percent of stream nutrients in the Lower Grand River basin eventually make their way to the Gulf of Mexico and contribute to seasonal hypoxia (Alexander et. al. 2008). Nitrate concentrations in shallow glacial drift aquifers, which are common and provide substantial amounts of drinking water in the basin, tend to be significantly higher than in other parts of the state (Wilkison and Maley, 1996). Nineteen private and public wells and two reservoirs currently provide drinking water in the proposed Locust Creek Healthy Watershed Initiative project area.

Historical Watershed Planning and Partner Emphasis

Monitoring efforts during the 1980's by MDC, MDNR, and USDA began to identify water quality concerns in the Locust Creek drainage area and Lower Grand River region. Significant erosion, sedimentation, and nutrient loading have been occurring throughout time, however at an accelerated rate due to human interaction and agricultural production practices on the landscape. Effects have been compounded due to an unprecedented, 30-year wet cycle that the region has been experiencing since the early 1970's (according to 2009 data from University of Missouri weather and climate researchers). During the 1980's and much of the 1990's, governmental agency programs primarily targeted soil erosion and sedimentation. USDA's regular and continuous sign-up Conservation Reserve Program (CRP) has been extremely popular, with extensive landowner enrollment in the project area.

Despite successful program enrollment, natural resource related issues and threats within the watershed continued. In 1994, the MDC Fisheries Division crafted the Locust Creek Basin Management Plan to formally document current natural resource conditions, recognize problems, and identify short and long term strategies that could be used to protect and enhance resources within the basin. County SWCDs in the project area have been successful at implementing conservation practices such as ponds, terraces, waterways, etc., however adequate funding to service all annual requests for cost-share has never been available. A shift in program emphasis during the late 1990's gradually incorporated wildlife habitat and plant diversity, as well as nutrient management on crop and pastureland, allowing additional resource accomplishments. After significant flood events in 1993 and 1995, many new wetlands were created or restored in the area through USDA's highly successful Wetland Reserve Program (WRP).

During the late 1990's and early in 2000, MDC specifically developed strategies to address aquatic, forest, and wildlife resource management concerns in the Locust Creek basin. Documentation shows that from 2000-2009, MDC staff provided landowner assistance to install nearly 2,900 acres of streamside buffers and shallow water wetland projects in Linn County – much of which was in the greater Locust Creek drainage area.

In the early to mid-2000's, many agency and non-governmental organization (NGO) partners collaborated to identify critically important areas on the lower portions of Locust Creek, near its confluence with the Grand River. Since this region contains the very best examples of certain unique, remnant natural plant and animal communities rarely found in much of the United States, an area encompassing these significant resources was mapped and designated the Lower Grand Conservation Opportunity Area (COA), Figures 1, 2. Numerous public landholdings testify that this area contains high quality fish, forest, wildlife, and soil resources with many species of conservation concern. The Lower Grand COA designation acknowledges that the area should be targeted with program, technical, and financial resources when available.

MDC incorporated the Lower Grand COA in its Comprehensive Wildlife Strategy (CWS), a planning process used to target priority resource concerns and obtain financial support for priority resource issues. In 2009 MDC developed a regional action plan to intensively market conservation programs to landowners in the Lower Grand COA. This plan contains resource management objectives and specific action items for conservation practice implementation on the land. MDC has recently undertaken a

process using hydrogeomorphic modeling in the Lower Grand basin to determine habitats and natural communities which can be protected and restored with the least amount of agency expenditure, ensuring fiscal efficiency in private land assistance. USFWS is also in the initial stages of a strategic planning effort for the region surrounding Swan Lake National Wildlife Refuge, including the entire Lower Grand COA. Once completed, it is anticipated that future funding will be dedicated to natural resource concerns that have been identified within and surrounding the COA.

In 2009, MDNR instituted a new method to allocate funds to SWCDs in Missouri based upon soil and water resource inventories and identification of priority concerns. These Needs Assessment Reports (NARs) were used to determine Soil and Water Conservation Program (SWCP) funding needed for landowner assistance to implement practices that accomplish agency conservation goals. Erosion control measures and nutrient management are the two primary resource concerns identified in the NARs for partnering counties in project area. For the principal partnering counties of Linn and Sullivan, their respective reports documented \$3.74 million and \$2.2 million is needed county-wide over the next five years. Previous 3-year averages for SWCD cost/share expenditures in the entire counties of Linn and Sullivan are approximately \$178,000 (serving 50 landowners) and \$203,000 (serving 29 landowners), respectively. Of those totals, nearly \$161,000 was expended in the Locust Creek project area for both counties to serve 23 landowners. The combined NARs for these counties indicated an annual need of \$1.2 million, but combined average annual allocation has been only 1/3 of that, indicating the need for additional resources. Information from the NARs will be incorporated into project area specific ranking criteria for EQIP and WHIP enrollments with MRBI-CCPI awarded funds.

Targeted Conservation Practices

A voluntary, incentive based approach will be used to encourage the adoption of core and supporting conservation practices that reduce erosion, limit sediment and nutrient loading of nearby water resources, improve wildlife habitat, and encourage sustainable agricultural production. MRBI-CCPI funding, and to a lesser extent partner financial support, will provide for technical assistance and cost/share to eligible producers of agricultural and nonindustrial private forest land in the project area.

Policies and procedures already in place for the Missouri NRCS EQIP and WHIP programs will be used to administer awarded MRBI-CCPI funds to interested landowners. These policies will be revised to accommodate special ranking considerations and promote conservation practices that address specific needs within project area. A list of the core and supporting conservation practices and activity plans requested for MRBI-CCPI funding in the project area are provided in Tables 3, 4, and 5. To facilitate producer enrollment and streamline practice implementation, a group conservation plan may be developed for eligible producers within the project area if deemed necessary by project partners.

Table 3: Core Practices

Avoiding	Controlling	Trapping
328 Conservation Crop Rotation	329 Residue and Tillage Management	332 Contour Buffer Strips
340 Cover Crop	330 Contour Farming	391 Riparian Forest Buffer
528 Prescribed Grazing	412 Grassed Waterway	393 Filter Strip
590 Nutrient Management	512 Pasture and Hay Land Planting	656 Constructed Wetland
633 Waste Utilization	554 Drainage Water Management	657 Wetland Restoration
	585 Strip Cropping	658 Wetland Creation
	600 Terraces	659 Wetland Enhancement
	643 Restoration & Development of Declining Habitats	
	645 Upland Wildlife Habitat Management	

Table 4: Supporting Practices

Avoiding	Controlling	Trapping
313 Waste Storage Facility	342 Critical Area Planting	342 Critical Area Planting
317 Composting Facility	362 Diversion	350 Sediment Control Basin
327 Conservation Cover	386 Field Border	356 Dike
382 Fence	410 Grade Stabilization Structure	490 Forest Site Preparation
472 Access Control	449 Irrigation Water Management	533 Pumping Plant
516 Pipeline	533 Pumping Plant	587 Structure for Water Control
528 Prescribed Grazing	587 Structure for Water Control	629 Waste Treatment
561 Heavy Use Area Protection	620 Underground Outlet	638 Water and Sediment Control Basin
578 Stream Crossing	638 Water and Sediment Control Basin	646 Shallow Water Development and Mgmt
612 Tree/Shrub Establishment		
614 Water Facility		
632 Solid Liquid Waste Separation Facility		
634 Waste Transfer		

Table 5: Conservation Activity Plans

102 Comprehensive Nutrient Management Plan

Requested Technical Adjustments to EQIP Policy

Streamside levees are not prominent in most of the Locust Creek basin. They are essentially used in prime farmland along the main channel of Locust Creek by crop production landowners in the HUC-12 watershed, 102801030903 Kemper Branch-Locust Creek. These levees generally “hug” the high bank of the stream channel, leaving narrow stream corridors with little vegetative cover and very limited flood storage capacity. Narrow chutes formed by levees have constricted high water stream flow; elevating flood heights over a major portion of this HUC-12 watershed. Flooding has become problematic not only to local producers, but to local units of government who continually battle damage to infrastructure.

Project partners believe that moving these levees back away from the stream channel will provide water quality and wildlife benefits, in addition to those experienced by landowners and local units of government. Creating “setback” levees would increase riparian corridors and corresponding wildlife habitat, increase stream flow and flood water storage capacity, provide more effective crop land protection during high flows, and limit expensive repairs to local infrastructure. Increased flood storage capacity slows water flow and mitigates erosive power, allowing additional time for nutrient filtering and deposition of sediment along rough riparian vegetation. These benefits are anticipated to provide lasting gains to the regionally and nationally significant species and communities of conservation concern found in Pershing State Park, at the south end of this HUC-12 watershed.

Project partners are requesting flexibility to provide technical and financial assistance for “setback” levees through MRBI-CCPI funding. Installation of the practice would be limited to landowners in the HUC-12 Kemper Branch-Locust Creek watershed (102801030903), who have existing levees immediately adjacent to the stream channel. EQIP funding would be provided through MRBI-CCPI funding for the supporting conservation practice 356 DIKE. Monetary assistance would be limited to the relocation of existing levees a minimum of 180’ from the high bank of the stream channel. Enrollment of the newly opened riparian area into a Continuous CRP or EQIP 391 Riparian Forest Buffer would be required. Practice requirements would be determined by partners on the project directing committee, working in

conjunction with the Missouri NRCS state office. Finally, although not listed on the national NRCS MRBI website under available practices, interim practice 799 Monitoring and Evaluation is also requested for use in the project area.

Enrollment Procedures and Ranking Criteria

MRBI-CCPI EQIP and WHIP enrollment will be coordinated and contracts administered by local NRCS and SWCD technical staff in the county where the land lies. NRCS will enter into project area EQIP and WHIP contracts directly with eligible producers. SWCD staff will administer contracts with qualifying producers for regular (annual) SWCD cost-share program allocations, the additional MRBI matching SWCD cost-share funds authorized for this project, and any nonfederal conservation practice incentives received through donations by other financial sponsors. NRCS and SWCD staff in the project area will work together to provide planning and technical assistance to producers who wish to apply for programs to address resource concerns. MDC staff will provide planning, technical assistance, and specialized expertise to producers and partnering staff in the areas of aquatic resource management, wetlands, forest management, natural community and wildlife management.

Project partners will utilize Missouri NRCS EQIP and WHIP policies and ranking procedures currently in place, although revised to target aforementioned priorities that achieve project objectives. Enrollment forms, software, and tools will incorporate the selected core and supporting practices outlined previously, in addition to partner-developed ranking criteria which address priority resource concerns. Development of specific ranking criteria is currently underway by a project area workgroup and will be finalized by June 1, 2010 to be used for obligating FY2010 MRBI-CCPI funds. Ranking criteria will be continually evaluated and adjusted to encourage future enrollment and ensure project success. Project partners may request that NRCS expedite the ranking and approval process after program application periods so that implementation of priority conservation practices can begin without delay. Eligible cooperators within the project area who apply for conservation practice assistance and rank the highest (based upon project area specific criteria), will be qualified to enter contracts for available federal and nonfederal financial incentives offered by project sponsors (including MRBI-CCPI funds). Eligible land will be defined for each participant in accordance with the following regulations: EQIP: 7 CFR 1466.8(c) and WHIP: 7 CFR 636.4(b).

A partner workgroup has been assembled to assess local concerns and develop project area ranking criteria. Selected ranking criteria will ensure that MRBI-CCPI and partner funds are directed to landowner assistance which addresses high priority resource concerns so that objectives of the project may be achieved. The workgroup is presently considering, and will potentially assign additional weight to the following factors for the purpose of ranking program applications:

- Installation of multiple core and supporting conservation practices.
- Installing conservation practices that address multiple priority resource concerns (as determined by the workgroup).
- Applications that adopt a systems approach to address all major resource concerns of an operation (within reason, as determined by the workgroup regarding agency and project goals).
- Conservation practices that encourage nutrient management, reduce nutrient transport, address soil erosion, decrease sediment runoff, restore or protect natural communities and species of concern, and improve critical wildlife habitat.
- Eligible land within critically identified watersheds (Figure 2).
- Eligible land in other priority areas, such as agricultural land which has drainage that directly enters a perennial stream, is located within a certain distance of perennial streams, or is adjacent to significant remnant native plant or animal communities (as identified by the workgroup).

- Other key elements as determined by the workgroup.

A variety of outreach and education activities will be used to encourage program enrollment and facilitate the installation of priority conservation practices. These activities will be performed by partnering staff using in-kind resources and anticipated nonfederal financial support outlined in the project budget. Available programs will be promoted to all landowners in the project area, with special emphasis directed toward encouraging participation by beginning, limited resource, or otherwise socially disadvantaged producers.

Project partners expect to develop, print, and distribute brochures, handouts, and other marketing materials highlighting the Locust Creek Healthy Watershed Initiative, natural resource conservation opportunities, sustainable agricultural production methods, and available landowner assistance programs within the project area.

Project Objectives and Action Items

The Locust Creek Healthy Watershed Initiative will focus on reducing soil erosion and sediment delivery, nutrient loading, and maintaining sustainable agricultural production using a systems approach to avoid impairment of water resources, while enhancing unique habitats both locally and globally. Project partners mutually agree that there is no accurate method to predict landowner participation in programs funded by this proposal. Certain listed objectives represent high levels of enrollment, and as such may not be achievable within realistic expectations. Furthermore, high levels of cooperator interest and program participation may require funding greater than is specified in this proposal. Moreover, an integrated, cooperative approach will be used by partners to financially support all aspects of the project, rendering inability to predict an exact source of funding for each objective. MRBI-CCPI funding will be a major source of financial support for the entire project. Over its duration, the following specific and measureable objectives will be the focus of this project:

- Establish a project specific water quality sampling network of at least 10 sites (at least one (1) HUC-12 watershed site, three (3) HUC-12 watershed sites and at least six (6) edge-of-field sites).
- Determine the effectiveness of selected conservation practices to reduce average nutrient and sediment loadings (pounds/day) at established edge-of-field monitoring sites using discrete sampling.
- Reduce the average total nitrogen loadings (pounds/day) and the average total nitrogen delivery rates (tons/acre) to selected HUC-8 and HUC-12 sampling sites in the Locust Creek basin by 45%.
- Reduce the average total phosphorus loadings (pounds/day) and the average total phosphorus delivery rates (tons/acre) to selected HUC-8 and HUC-12 sampling sites in the Locust Creek basin by 45%.
- Reduce soil erosion rates to tolerable soil loss (or "T") and address all areas of active gully erosion on land enrolled in MRBI-CCPI project funded programs.
- Reduce the average sediment loadings (pounds/day) and the average sediment delivery rates (tons/acre) to selected HUC-8 and HUC-12 sampling sites in the Locust Creek basin by 45%.
- Provide financial assistance payments for up to 40 eligible producers for developing and implementing nutrient management plans.
- Provide financial assistance payments to eligible producers for installation of up to 100 acres of new filter strips, field borders, and riparian forest buffers.
- Provide financial assistance payments for up to 30 eligible producers for livestock exclusion from streams.
- Provide financial assistance payments for up to 20 eligible producers for installation of wetland restoration and enhancement.

- Conduct a minimum of five (5) on-farm field days, tours, or demonstrations of conservation practices during the project period.
- Present information to at least 400 landowners at meetings, seminars, workshops, or conferences (such as practical, resource-conserving agricultural practices, management approaches, or program enrollment opportunities).
- Conduct one-on-one site visits with at least 100 landowners to discuss available MRBI-CCPI cost/share assistance payments for implementing core and supporting conservation practices.
- Submit at least twelve (12) articles to local newspapers, farm magazines, and agricultural newsletters.
- Conducting at least twelve (12) radio, internet, and other media interviews and advertising.

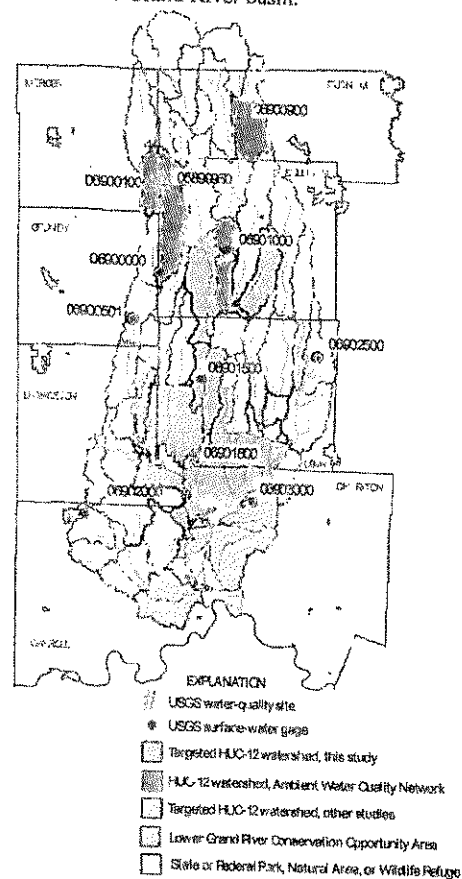
Project Area Monitoring and Evaluation

Monitoring and evaluation in the project area will focus primarily on water quality data collection. A multi-tiered sampling network will be used to evaluate how implementation of resource conservation practices in the Lower Grand River basin affect stream water quality and nutrient export. Water quality sampling stations will be positioned to quantify and characterize water quality at field edges and in larger receiving stream segments of the Lower Grand River basin (HUC-12 and HUC-8 level). USGS has been secured as a partner in the Locust Creek Healthy Watershed Initiative to perform all aspects of the water quality monitoring program (tier 1, 2, and 3), pending agency, partner, and MRBI funding (financial support from additional partners is being sought for monitoring efforts and will be incorporated into the project budget). The proposed plan utilizes an existing ambient network of stream-sampling sites that are funded by a variety of partners including MDNR, the U.S. Army Corps of Engineers, and USGS, Figure 3. Integration with this network minimizes project costs, facilitates the 3-tiered sampling approach, and provides benefits to stakeholders currently tasked with developing state nutrient criteria as well as numerous local, state, federal, and non-governmental conservation groups expending resources in the Lower Grand River basin.

Additionally, water-quality data from this study will be compared to previously published information at the HUC-12 and HUC-8 levels. An existing trend and load model that covers the HUC-8 level (Grand River near Sumner) will be updated over the course of this study and used to evaluate how short-term (5-year) changes relate to longer time-scale patterns. All data collection will be conducted according to established USGS procedures and Quality Assurance / Quality Control guidelines. A detailed Water Quality Monitoring Plan for the project, including sample testing protocols, is available upon request.

In addition to the ambient monitoring network, stream and water quality will be monitored 12 times annually at 10 sites in the study area over FY2010-2014, Figure 3. Measurements will include discharge, physical parameters, total and dissolved nutrients (N and P), and suspended sediment. Biologic conditions will be quantified seasonally and annually through algal (periphyton) biomass and periphyton community structure. Sites will be selected in consultation with producers and partnering resource

Figure 3. Location of selected 2010 and historical surface water sampling sites and targeted HUC-12 watersheds sampling sites in the Lower Grand River basin.



managers, employing designs which characterize targeted individual treatment practices and/or a gradient of integrated resource practices at field edge and HUC-12 scales within the study area. To the greatest extent possible, sample collection will be conducted synoptically and concurrent with ongoing Ambient Water-Quality Program sampling and with additional MRBI-CCPI projects awarded in the basin. Data collection procedures and approaches will be consistent across the basin to increase comparability and allow pooling of data from other studies, minimize bias, and provide transferable results. Data from study sites will be analyzed for seasonal and annual trends, in relation to selected land use and conservation practice data in the basin. In lieu of simulated estimates of streamflow (SWAT) and nutrient transport, data collected as part of the existing Ambient Water Quality network and proposed HUC-12 monitoring locations specific to this project will be used to calculate annual loads and trends at the HUC-12 level (where sufficient data exists).

In addition to the water quality monitoring plan outlined above, as a measure of project success, project partners will track the number of producers enrolling in MRBI-CCPI funded programs during the project, the number of conservation practices implemented, and their locations. Conservation practice information and project financial updates will be submitted on an annual basis (or as requested) to NRCS, MRBI-CCPI administrators, and other interested parties. A final report will be provided by the project sponsor to MRBI-CCPI administrators at the end of the project period.

Project Duration

Pending requested MRBI-CCPI funding, the Locust Creek Healthy Watershed Initiative will commence during federal FY2010 on July 1, 2010. Partner action items, activities, and program enrollments described within this proposal will continue through the end of federal FY2014 (September 30, 2014). The project sponsor and partners are flexible to accommodate suggested changes in project duration. Project area specific EQIP and WHIP policies and ranking criteria will be finalized by June 1, 2010 to facilitate a producer enrollment during the initial, short project fiscal year of 2010. Partners are prepared to promote and conduct a landowner sign-up from July 1-September 1, 2010 to obligate FY2010 MRBI-CCPI funds in landowner contracts. Producer enrollment during FY2011-2014 will be continuous throughout each fiscal year, with project partners retaining flexibility to collect, rank, and approve applications for program funding on future dates which will be announced. Standard EQIP and WHIP program administration procedures will be followed.

Partner Contributions and Projected Budget

Partner contributions within this project area have been significant and are expected to increase. We are actively seeking additional project partners and expect to continually add support over the life of the project. Initial partners who have committed considerable in-kind technical or financial support include MDNR, MDC, Linn and Sullivan SWCDs, Missouri NRCS, and USGS. Partner commitment allows federal MRBI-CCPI fund leveraging, accelerates current effort by partners to reduce soil erosion and nutrient transport, and promotes establishment of critical plant communities and wildlife habitat in the project area. Current nonfederal funds and in-kind services pledged from partnering organizations are illustrated in Table 6 and described in following text. These matching funds will be combined with the **\$3.64 million (total WHIP and EQIP)** requested in federal MRBI-CCPI funds for a preliminary estimated total project budget of approximately **\$5.6 million**.

Table 6: Preliminary Project Budget by Federal Fiscal Year

Funding Source (Targeted Element)	FY2010	FY2011	FY2012	FY2013	FY2014	Total
MRBI-CCPI Funding Requested (EQIP – Technical and Financial Assistance)	\$500,000	\$500,000	\$700,000	\$700,000	\$700,000	\$3,100,000
MRBI-CCPI Funding Requested (WHIP – Technical and Financial Assistance)	\$50,000	\$100,000	\$120,000	\$120,000	\$120,000	\$540,000
Non-Federal Matching Funds Sought (supplementary water quality monitoring)	\$40,000	\$80,000	\$80,000	\$80,000	\$60,000	\$340,000
Linn County SWCD (regular SWCP conservation practice cost/share)	\$65,000	\$65,000	\$65,000	\$65,000	\$65,000	\$325,000
Linn County SWCD (technical assistance / administration, in-kind)	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$120,000
Sullivan County SWCD (regular SWCP cost/share)	\$95,000	\$95,000	\$95,000	\$95,000	\$95,000	\$475,000
Sullivan County SWCD (technical assistance in-kind)	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000
Mo Department of Natural Resources (SWCP funding for MRBI project areas)	*TBD	*TBD	*TBD	*TBD	*TBD	*TBD
Missouri Stream Teams #3113 and #3625 (volunteer water quality monitoring)	\$300	\$300	\$300	\$300	\$300	\$1,500
Missouri Department of Conservation (technical assistance / planning, in-kind)	**	**	**	**	**	**
USGS / State of Missouri (ambient water quality network, in-kind)	\$15,000	\$60,000	\$60,000	\$60,000	\$45,000	\$240,000
USGS (Real-time Stream Gauging Program, in-kind)	\$10,000	\$40,000	\$40,000	\$40,000	\$30,000	\$160,000
USGS Coop Funds (additional sites plus edge of field monitoring)	\$6,000	\$38,750	\$38,750	\$38,750	\$22,500	\$144,750
Total by FY	\$865,300	\$1,033,050	\$1,253,050	\$1,253,050	\$1,191,800	\$5,596,250

* To Be Determined. Up to \$500,000 in additional statewide MDNR SWCP funds have been pledged for nonfederal match with MRBI-CCPI funds awarded to Missouri project areas. Project specific commitment will be determined after MRBI-CCPI funding is awarded.

** The Missouri Department of Conservation has offered significant partnering support through in-kind planning efforts and technical assistance on various natural community, wetland, and wildlife aspects of the WHIP and EQIP programs. Due to budgetary and policy constraints, specific financial support cannot be provided.

The Linn and Sullivan county SWCDs have a history of working closely with landowners in the project area to implement soil and water conservation measures. The SWCDs expect to dedicate staff time using existing procedures to provide technical support for the design, layout, and installation of practices funded by MRBI-CCPI. In concert with MDNR, both districts plan to dedicate regular and additional SWCP cost-share to landowners as outlined below.

Nearly \$500,000 in soil and water conservation cost-share is allocated annually to landowners in Linn and Sullivan counties through MDNR's regular SWCP. The state of Missouri will provide up to \$500,000 statewide in additional nonfederal funds beginning July 1, 2010, specifically earmarked for project proposals awarded federal MRBI-CCPI funds. These monies have been pledged by the Soil and Water Districts Commission and will be administered by the MDNR's SWCP. A portion of these funds will be used to leverage, support, and enhance project monitoring, and nutrient and sediment reduction efforts in each of the MRBI-CCPI funded project areas. Project specific SWCP funding allocations will be determined after MRBI-CCPI funding is awarded by NRCS. At that time, a revised budget will be submitted for each project awarded MRBI-CCPI funds showing estimated nonfederal funding commitment from the SWCP. It is also anticipated that additional SWCP funds may be available for future MRBI-CCPI project proposals, but no future commitment can be made at this time. Through MDNR's Section 319 Nonpoint Source Implementation Program, funded MRBI-CCPI project sponsors can also apply and receive competitive advantage for \$40,000 in statewide Mini-grant funding. Successful MRBI-CCPI applicants can use a portion of these funds to implement outreach and educational activities of this proposal. Statewide attention to this high priority project is expected to draw additional funding through other programs such as the U.S. EPA/MDNR section 319 Program.

Staff of MDC from multiple Divisions throughout the project area provides continuous support to Missouri NRCS and SWCD, offering expertise in natural resource conservation projects on private land. The Private Land Services (PLS) division focuses specifically on land management planning for private landowners, including the administration of various local, state, and federal conservation programs. The northeast and northwest regions of MDC have pledged to dedicate staff time for planning and program administration related to aquatic, forest, and wildlife resources addressed through MRBI-CCPI funding. Precedence will be given to landowner assistance within the Lower Grand COA and the proposed project area that achieve agency goals.

Missouri NRCS staff will continue to provide technical assistance to landowners and administer federal Farm Bill programs within the entire project area. All MRBI-CCPI funding will be distributed through project specific enrollment and planning procedures, revised from those already in place for EQIP and WHIP.

USGS has offered financial and in-kind project commitment in the area of water quality monitoring. As outlined in the details of this proposal, they will perform all aspects edge-of-field, HUC-12, and HUC-8 water quality monitoring through a network of sampling equipment.

Several Missouri Stream Teams have been actively monitoring water quality in the Locust Creek watershed. These teams use equipment provided to voluntarily monitor important stream reaches with support from MDC and MDNR. Stream teams are expected to continue current monitoring efforts and contribute to project goals.

General Project Timeline

PROJECT TASK	TARGET DATE	RESPONSIBLE PARTY	DELIVERABLES
Award MRBI-CCPI funding	May 31, 2010	NRCS	letters to project sponsors
Finalize MRBI-CCPI partnership agreements	June 30, 2010	NRCS, sponsoring SWCDs	signed partnership agreement
Finalize producer ranking criteria NRCS approval	June 1, 2010	sponsoring SWCDs	project area WHIP and EQIP producer ranking worksheets
Obtain producer applications	July 1-Sept. 1, 2010 Ongoing FY2011-2014	NRCS, Partnering SWCDs, MDC	signed producer contracts
Obligate MRBI-CCPI funds through producer contracts	By Sept. 1, 2010 TBA for FY2011-2014	NRCS, partnering SWCDs	producer contracts
Conduct annual SWCD Needs Assessments	July 1 through September 30	partnering SWCDs	Needs Assessment Reports
Evaluate / revise project proposals (with NRCS approval)	Ongoing, as necessary	project partner committee	revised project proposal
Attend NRCS MRBI-CCPI meetings, workshops, etc.	as scheduled	sponsoring SWCDs, partners	attend NRCS MRBI-CCPI meetings, workshops, etc.
Conduct quarterly project partner meetings	January / April July / October	sponsoring SWCDs, partners	conduct quarterly project partner meetings
Submit performance and financial progress reports to NRCS	April 30 / October 30	sponsoring SWCDs	semi-annual, annual, and final report
Obtain additional partner funding to leverage MRBI-CCPI funds	Ongoing	partners	additional partner commitments, grants, awards
Develop displays, news releases, and brochures	Ongoing, as necessary	Linn, Sullivan, and Putnam County SWCDs, MDNR, MDC, NRCS	displays, news releases, brochures
Conduct radio, internet, multi-media advertising of project programs	Ongoing, as necessary	Linn, Sullivan, and Putnam County SWCDs, MDNR, MDC, NRCS	report on activities
Organize and conduct field days, tours, or demonstrations	Ongoing, as necessary	project partner committee	report on activities
Conduct partner strategy meetings for project activities	Ongoing, as necessary	project partner committee	plan of action for enrollment
Conduct tier 1, 2, 3 monitoring and evaluation in the project area	Ongoing through	USGS, MDNR	water quality data report
Prepare final water quality report	May 30, 2015	USGS, MDNR, contractors	final water quality report
Tract / map the locations of installed conservation practices	Ongoing	Linn, Sullivan, and Putnam County SWCDs, MDNR, MDC, NRCS	map of conservation practices installed during project
Track meetings, seminars, and conferences conducted	Ongoing	sponsoring SWCDs, project partners	activities report
Track field days, tours, and workshops conducted	Ongoing	sponsoring SWCDs, project partners	activities report
Complete final project report	June 30, 2015	sponsoring SWCDs, partners	final project report

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