

PROJECT 13

TITLE: EUCHA/SPAVINAW WATERSHED RIPARIAN PROTECTION INITIATIVE

AGENCY: Land Legacy, a non-profit 501 (c)(3) land conservation organization in cooperation with Tulsa Metropolitan Utility Authority (TMUA), a public trust organization

## LOCATION

The Lake Eucha / Lake Spavinaw watershed is located in Mayes and Delaware Counties in northeastern Oklahoma and in Benton County in northwestern Arkansas (Figure 1). The watershed includes Hydrologic Unit Codes 11070209050, 11070209040, and 11070209060. The principal stream in the Lake Eucha Watershed is Spavinaw Creek, which drains approximately 230,000 acres in Arkansas and Oklahoma, of which 60% is in Oklahoma. Spavinaw Creek is a tributary to the Neosho River, which is a tributary to the Arkansas River. Spavinaw Creek drains Lake Eucha and is impounded to form Lake Spavinaw located approximately four stream miles downstream of the Eucha dam. Other major tributaries to Lake Eucha include Beaty Creek, Brush Creek, and Dry Creek.

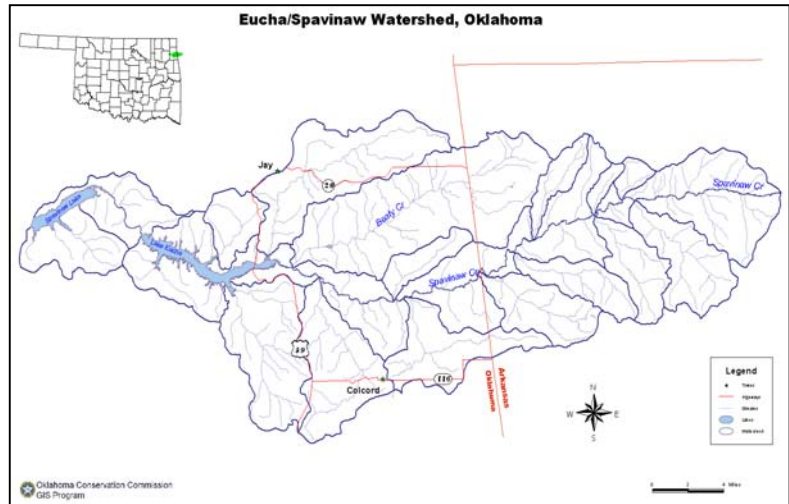


Figure 1. Location of Eucha/Spavinaw Watershed.

Both Lake Eucha and Lake Spavinaw serve as principle water supplies for the City of Tulsa, seventeen other municipalities and eleven rural water districts in northeastern Oklahoma. Nearly twenty percent of the population in Oklahoma relies on Tulsa's drinking water.

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## PROJECT AND CONSERVATION NEED

The conservation of the Eucha/Spavinaw basin is essential to the health and protection of numerous fish and wildlife species, as well as to the health of human populations adjacent to the watershed. Within the watershed lies the Ozark Plateau National Wildlife Refuge and the Spavinaw Hills Wildlife Management Area (WMA). Spavinaw Hills WMA covers 14,316 acres and the Ozark Plateau NWR covers 3,067 acres, but an expansion of the refuge has recently been approved to bring the total to 15,000 acres. These areas protect numerous native plant and animal species that are essential to the ecosystem. There are four endangered species, three threatened species, and nine species of concern that utilize the Eucha/Spavinaw basin.

Population in Delaware and Mayes Counties has increased by 25% over the past decade, and in Benton County, by 89%. These predominantly rural areas have faced extreme development pressures in a short period of time, and have lacked many of the resources necessary to properly manage the changes and their environmental effects. Immediate protection of key targeted properties will ensure that the highest quality habitat and water resources are protected. Creating

links between or expanding the boundaries of these wildlife protection areas will ensure the long-term protection of contiguous, high quality habitat for wildlife.

Of additional concern to the watershed are the current land management techniques used by many landowners. Land cover in the watershed is characterized in Table 1. Non-point source pollution, as a result of land application of poultry litter, additional excess nutrient runoff, and livestock access to freshwater sources, has seriously degraded the quality of the water, ultimately draining to Spavinaw Lake, the drinking water supply for northeastern Oklahoma. The karst topography of the region allows groundwater sources to become polluted, damaging the sensitive underground ecosystem, ultimately contaminating the underground springs and cave habitats that are essential to not only the specialized endangered species (Ozark big-eared bat, gray bat, Indiana bat, and the Ozark crayfish), but also numerous common wildlife species. The permanent protection of land through this watershed will provide immediate short-term benefits by lowering the level of pollutants entering the water, and long-term benefits in the way of permanent habitat protection on a landscape level for both migratory and native species.

**Table 1.**

Land Cover	Area (%)
Forest	52.3
Pasture	29.6
Hay	13.3
Row Crops	2.9
Urban	1.8
Range	0.1

## **PROBLEM STATEMENT**

The Eucha/Spavinaw watershed is experiencing two major problems. First, excessive nutrient loading has produced eutrophication that has resulted in excessive production of phytoplankton (planktonic algae and cyanobacteria [formerly = blue-green algae]) and associated undesirable chemical conditions in the water. Second, the types of algae and cyanobacteria that sometimes grow prolifically under conditions of eutrophication as currently exist within the Eucha/Spavinaw watershed release undesirable organic compounds that produce taste and odor problems in the water. Both of these conditions diminish the reliability and desirability of the Eucha/Spavinaw watershed for water supply use, as well as for secondary functions, such as sport fishing and other recreational uses.

Excessive phosphorus and algae impairs Lake Eucha and Spavinaw Lake drinking water by causing taste and odor problems. High levels are also linked to carcinogenic disinfection byproducts. Blue-green algae, common in both reservoirs, have been shown to emit microcystins that have been recognized as an emerging public health issue. Microcystins can cause liver damage; other forms can be neurotoxins and cytotoxins. Blue green algae are also considered to be a major source of undesirable taste and odor compounds found in Lake Eucha and Spavinaw Lake.

The excessive phosphorus loading that has lead to the high levels of algae have impaired the drinking water use such that treatment costs skyrocket, or at times the water supply has been abandoned altogether. The City of Tulsa has documented additional treatment costs attributed to episodes of excessive algae exceeding \$72.78/MG. When the current treatment system is unable to eliminate the taste and odor problems, Tulsa has the option to abandon the two reservoirs. The additional costs of using Lake Hudson water, a nearby reservoir, exceed \$7,000 per day.

Additional public health concerns may exist or may develop as a direct consequence of continuing the current practices of agricultural waste disposal within the Eucha/Spavinaw watershed. A number of potential human pathogenic microorganisms (bacteria, viruses) common to animals are dispersed with manure deposited on the land and potentially transported to the water supplies. Moreover,

substantial quantities of hormones (e.g. estrogen and testosterone) are known to exist in poultry litter and have been known to leach from the litter. In addition, compounds containing arsenic, a highly toxic neurological agent for humans, are known to be added to feed to control intestinal parasites and promote animal growth, and substantial concentrations of arsenic are known to occur in litter. Lastly, under certain conditions, residual quantities of hormones and toxic compounds can enter the water transport routes to reservoirs. Remedial actions suggested below for the purpose of regulating nutrient loading to the Eucha/Spavinaw watershed would also assist in reducing the transport and loading of pathogens, hormones and toxins to the watershed.

The Oklahoma Water Resources Board (OWRB) lists both Eucha Lake and Spavinaw Lake watersheds as 'Nutrient Limited Watersheds' in the Oklahoma Water Quality Standards (OWQS). The OWQS assigns beneficial uses, criteria, and an antidegradation provision to waters in Oklahoma and is used in the permitting process, Total Maximum Daily Load (TMDL) process, and beneficial use assessment process to manage state waters.

The following segments in the project area are listed on Oklahoma's 303(d) list:

Spavinaw Lake	Eucha Lake	Beaty Creek
OK121600050020_00	OK121600050070_00	OK121600050160_00

The Updated Watershed Based Plan (WBP) for the Lake Eucha/Lake Spavinaw Watershed completed by the Oklahoma Conservation Commission in February 2007 details the causes and sources of impairment in the watershed.

### **LOAD REDUCTIONS**

The Oklahoma Department of Environmental Quality (ODEQ) draft TMDL currently estimates that phosphorus reduction of up to 95% from nonpoint sources (NPS) and 90% from point sources may be necessary to restore beneficial use support to the watershed; however, the required load reduction may be less. As a first step toward improving the water quality in the Eucha / Spavinaw watershed, the ODEQ recommended the implementation of a phased TMDL with the initial reductions corresponding to those provided in the court settlement between the City of Tulsa and the poultry producers.

The City of Decatur, Arkansas, was required in the lawsuit settlement to reduce the output of phosphorus from its wastewater treatment plant to less than 1.0 mg/l, an 80% reduction. Improvements are nearly complete to convert the plant from secondary to tertiary treatment, and the phosphorus output has been at or below the required limit since January 2006. Efforts to further reduce phosphorus loading from point sources are being researched. For example, a six-month trial of filters to remove phosphorus from sewage at the Siloam Springs, Arkansas wastewater treatment plant resulted in a phosphorus discharge of 0.025 mg/l. This indicates that improved technology may lead to significant reduction of nutrients from point sources, perhaps even surpassing the modeled reduction goal, assuming that cities are able and willing to fund such improvements.

Since the SWAT-estimated NPS reduction goal is so large, the initial goal of the WBP is to reduce the NPS loading to Lake Eucha of approximately 38,432 kg P/year to 19,216 kg P/year (50% reduction) and to decrease the point source loading from the Decatur WWTP to 1.0 mg/l phosphorus (80% reduction). Once this target load reduction has been achieved, the waterbodies in

the basin will be reassessed to determine the need for further load reduction. During this phased implementation period, the models can be further refined, and the water quality standards for anoxic volume and TSI should be reevaluated to determine if these criteria are appropriate. The SWAT estimated goals most likely strive to achieve water quality better than historical conditions; it is not apparent whether Lake Eucha ever consistently met the existing standards.

SWAT models have allowed for estimation of load reductions expected from certain management measures. The strategies identified below should work together to achieve the initial NPS phosphorus load reduction goal of 50 percent, which should subsequently improve the dissolved oxygen in the lakes and help to reduce the bacteria loads in the streams. Although some strategies highlighted in Table 2 identify the load reduction expected with that particular strategy, it is recognized that not any one activity could realistically result in the required substantial phosphorus reduction; instead, numerous strategies will have to work together to achieve the desired result

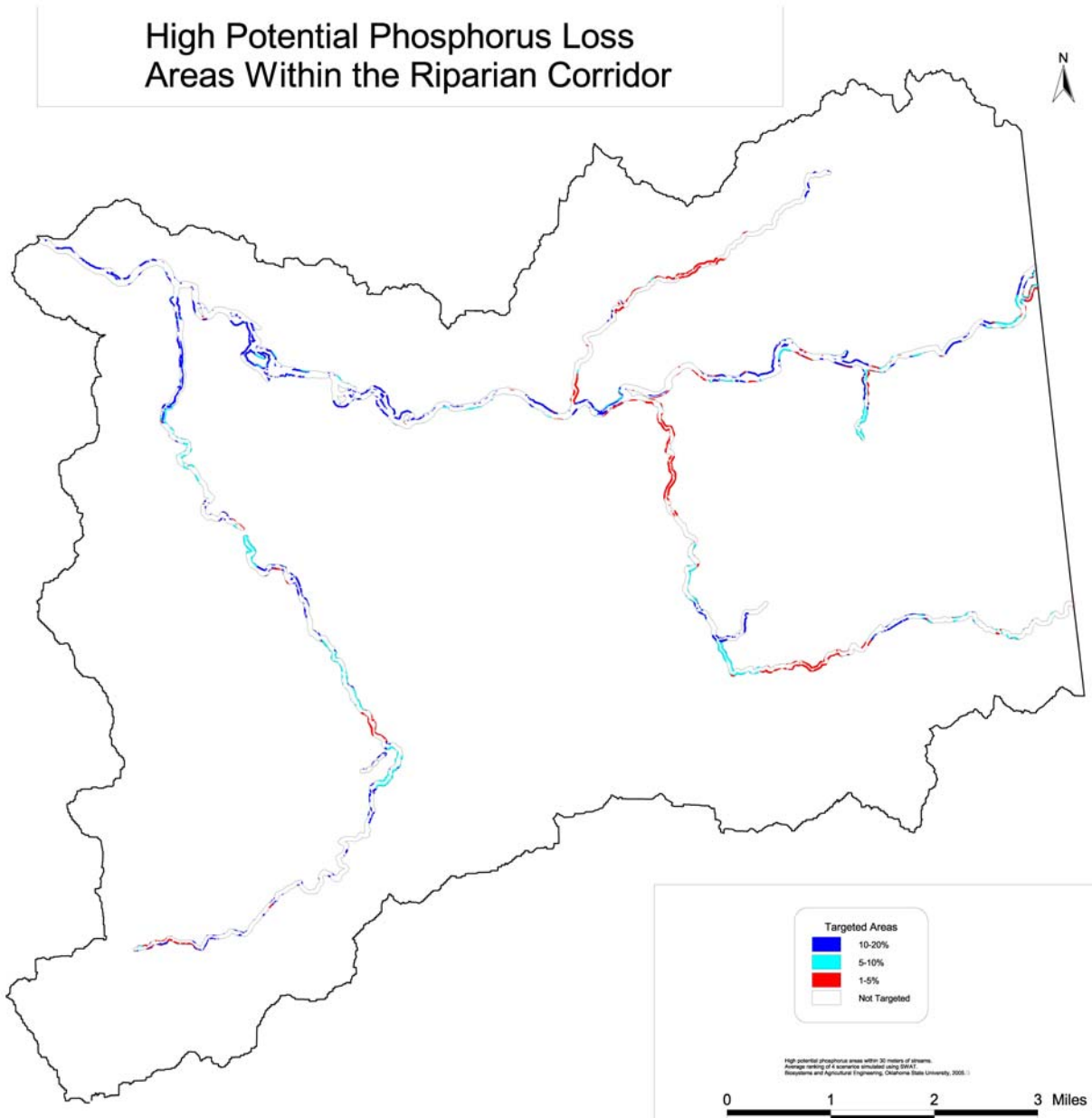
**Table 2. NPS Management Measures and expected load reductions.**

Practice	Expected NPS Load Reduction (from SWAT)
Cease poultry litter application	20%
Row crop BMPs	6%
Convert row crops to pasture and cease fertilizer use	50%
Fencing of riparian areas	60-78%
Strip cropping / contour farming	up to 40%
Nutrient management plan / decreased litter application	10-15%
Pasture land BMPs (no litter, rotational grazing, pasture planting, terrace installation)	44%
Vegetated strips around urban streams	0.5%
Conservation easements around Lake Eucha (erosion control)	0.5-0.7%
Streambank stabilization	15%

## TARGETING

The WBP describes in detail targeting efforts which were part of the 2003 319(h) project. Targeting reports indicated that riparian corridors are critical areas within the watershed because they serve as the conduit of NPS loading to the creek. Figure 2 shows the targeted areas in the Spavinaw Creek Basin as predicted by SWAT (Storm et al. 2005.) This project will look to establish conservation easements on the riparian corridor areas with the highest potential for phosphorus loss.

Figure 2. Riparian Targeting



## **PROJECT PARTNERSHIPS**

A coalition of stakeholders is being developed by Land Legacy to ensure that the Eucha/Spavinaw Watershed Protection Initiative will maximize its effectiveness. These partnerships will assist Land Legacy in various facets of this watershed program.

Land Legacy has entered into a signed cooperative agreement with the US Fish and Wildlife Service (USFWS), The Nature Conservancy, and the City of Tulsa to actively collaborate and assist with the implementation of the Watershed Protection Initiative. The USFWS maintains the Ozark Plateau National Wildlife Refuge, which extends through portions of the Eucha/Spavinaw watershed and protects habitat for several endangered and threatened species in the region. Land Legacy will work with the USFWS to identify tracts through the watershed that will accomplish the goals of both organizations. Collaboration between Land Legacy and the USFWS will also provide a funding mechanism for the purchase of conservation easements for this initiative. The City of Tulsa has a strong desire for the protection of Spavinaw Creek, and has earmarked funding for the protection of land surrounding Lake Eucha and Spavinaw Lake as well as additional funds for easements on land through the entire watershed. The City of Tulsa also has extensive on-going watershed monitoring programs and environmental management programs for the Eucha/Spavinaw watershed. This provides the opportunity to actively assess the outcomes of the initiative on the protection of the quality of the source water.

Land Legacy has a formalized agreement and a long-standing relationship with the United States Department of Agriculture (USDA), and will expand on this partnership to serve as a link between landowners and the USDA's Conservation Reserve Enhancement Program (CREP), which provides funding for fencing, alternate water sources, and other costs associated with riparian buffers. Through the CREP program, funds spent by Land Legacy to purchase conservation easements in the watershed will be matched by a ratio of 4-to-1 by the USDA.

Other partners include the Oklahoma Conservation Commission, which is the technical lead agency for Oklahoma's nonpoint source pollution management program and operates a volunteer program entitled "Blue Thumb" to provide education to citizens and groups on proper water management techniques; the Oklahoma Department of Wildlife Conservation, which reviews pollution occurrences that affect fish and wildlife resources and maintains a game refuge in the watershed; and the Cherokee Nation, which holds an interest in land throughout the region and has compiled water quality monitoring data and results. The Nature Conservancy's Arkansas Chapter and the Northwest Arkansas Land Trust will also be utilized as key partners in land conservation efforts in northwest Arkansas. The Kerr Center for Sustainable Agriculture will also be a partner in the advancement of the outreach and education component of the initiative. This non-profit organization has been dedicated to developing sustainable food systems and has conducted and sponsored workshops and seminars on such topics as farmland protection and best management practices for farmers and ranchers. In 2003, Land Legacy and the Kerr Center partnered on a series of farmland preservation workshops in Oklahoma and Tennessee.

This project is meant to serve as a catalyst and compliment to additional efforts undertaken in the watershed. The Tulsa Metropolitan Utility Authority has committed \$1.25 million for the purchase of conservation easements in conjunction with the Oklahoma Conservation Commission's efforts to direct Conservation Reserve Program/Conservation Reserve Enhancement Program funds to the watershed. Additionally, both the US Fish and Wildlife Service and the Oklahoma Department of Wildlife Conservation have land protection efforts in progress in the basin. These programs all

compliment the program set forth in this initiative to effectively address the entire basin. This diverse group of vested organizations illustrates the many committed partners and coordinated efforts already underway through the Eucha/Spavinaw watershed. The combination and utilization of these collective stakeholders will create a program that will serve as an innovative model in cooperative watershed protection for the entire region.

## **PROJECT PLAN AND COMPONENTS**

Section 319 funding for this project, if approved, would be utilized to implement a three-year initiative that is designed to protect and enhance the quality of water found in the Eucha/Spavinaw basin by reducing the level of phosphorus, additional nutrients, and pathogens, which enter the watershed. The funding would enable Land Legacy, in collaboration with established partners, to implement a comprehensive land conservation program targeting key watershed properties, develop an outreach and education program, and to monitor conditions to effectively document progress. In total, Section 319 (h) funding for this project will be matched or leveraged by approximately \$7,064,656.

Conservation easements are voluntary, compensatory tools to protect open space from development pressures and incompatible land uses. Easements are valued by deducting a property's open space value from its "highest and best use" value, resulting in prices that are more affordable for public agencies and conservation organizations than outright land purchases. They provide an economical way to protect critical natural resources, open space, and conservation values that are important to communities. Conservation easements leave land in private ownership and keep it productive for open space recreation or approved agricultural uses, thereby providing essential landowner stewardship while contributing to the local tax base. Conservation easements are flexible documents that can be tailored to the individual needs of a landowner and the goals of the organization protecting the property, including the creation of riparian buffers along streams.

Land Conservation. This component of the program will focus on the purchase and/or donation of permanent conservation easements on key targeted properties as defined by Land Legacy in cooperation with applicable stakeholders. In order to effectively pursue this element, a Spavinaw Watershed Assessment Team will be convened including the City Of Tulsa, US Fish and Wildlife Service (USFWS), The Nature Conservancy, the USDA, the Oklahoma Conservation Commission, the Oklahoma Department of Wildlife Conservation, the Cherokee Nation, the Northwest Arkansas Land Trust, and the Kerr Center for Sustainable Agriculture. This working group will provide general guidance to the preservation efforts occurring within the watershed. The combination and utilization of these collective stakeholders will create a program that will serve as an innovative model in cooperative watershed and wildlife protection.

The perpetual conservation easements that are being utilized in this program will provide a complimentary option for the landowners signed up to participate in the recently established Conservation Reserve Enhancement Program (CREP) in the Spavinaw watershed. Willing landowners participating in CREP within the watershed are paid to implement "best management practices" such as building fences to keep cattle out of streams and developing alternative water sources. Landowners can participate in CREP for up to 15 years. Permanent conservation easements can be acquired on the same properties, thereby ensuring that the land will be forever protected even after CREP payments have stopped. CREP funding enables landowners to create healthy riparian buffers that the permanent easements will require the landowners to maintain forever.

With an estimated cost per acre for a conservation easement of \$1,500, Land Legacy will permanently *protect a minimum of 969.11 acres of riparian area and critical drainage land within the Eucha/Spavinaw basin utilizing the funding associated with this program.* This acreage is in addition to the approximately 2,959.11 acres that will be protected through CREP as a result of matching funds leveraged using the associated Section 319 (h) funding. Land Legacy also anticipates leveraging additional funding from state, local, and private sources to protect more land in the watershed through further purchases of conservation easements as the initiative progresses.

In an effort to address best management practices on protected land, Land Legacy will include in each conservation easement specific techniques, which are to be utilized to ensure sustainable land use and water protection. These provisions will address the establishment of riparian buffers or setbacks along the creek corridors. Within buffer zones the trees and other native vegetation, on both sides of each creek bank, shall be maintained to reduce bank erosion and protect water quality. Native vegetation located within 30 percent of the geomorphic floodplain or 150 feet of the centerline of each creek channel, whichever is larger, shall be maintained and protected, and specifically shall not be removed for any purpose. In addition, livestock shall be limited from the creeks by adequate fencing and off-site watering facilities shall be provided. All soil amendments and fertilizer applications, either organic or inorganic, shall not exceed the phosphorus agronomic rate for crop needs. Research indicates that up to 80% of all surface level contaminants can be absorbed by riparian buffers.

Outreach and Education. In an effort to inform landowners and organizations of the benefits, obstacles, and potential resources and incentive programs that are available to enhance the efforts occurring within the watershed, Land Legacy will present the watershed protection program at pertinent conferences and related workshops. The Kerr Center, which Land Legacy has partnered with on a series of farmland preservation workshops in Oklahoma and Tennessee, may assist in organizing local or regional workshops to accomplish this objective. Elements of outreach will consist of: 1) distributing brochures on programs relative to watershed management; 2) presenting at local, regional and national seminars/conferences; and 3) continued press coverage of Land Legacy and partner objectives and activities. Land Legacy, with assistance from the US Fish and Wildlife Service, will also coordinate initial outreach to landowners that have been identified, using the guidance of acquisition priorities for all vested stakeholders, as owning key targeted tracts of land. This will include explanation and overview of the program goals and involved organizations, the conservation easement process, and the benefits associated with land conservation for the landowner, wildlife, and water quality.

Monitoring and Assessment. Monitoring and assessing progress toward the environmental goals and results of these initiatives will be evaluated through several separate sources. The number of landowners who choose to participate, and the respective number of critical watershed properties protected, is a primary measure of program effectiveness. Resulting water quality in the Eucha/Spavinaw basin will be monitored by numerous agencies, which will partner in this effort. These include the United States Geological Survey, the City of Tulsa, the Oklahoma Conservation Commission, and the Oklahoma Water Resources Board. The frequency of occurrence of taste and odor complaints concerning the drinking water in the region will serve as a level of program measurement directly related to the public perception of the effectiveness of the applied measures. Importance will also be placed on input and feedback received from workshop attendees and sponsors, and the degree to which any local workshops result in local watershed protection efforts.

Ongoing water quality monitoring efforts are detailed in the WBP for the Eucha/Spavinaw watershed.

Land Legacy staff and the US Fish and Wildlife Service will conduct monitoring on all protected land in the watershed. These site visits will ensure that the requirements and criteria established in the conservation easement are being adhered to. USFWS staff will be responsible for monitoring the populations of endangered and threatened species and the effectiveness of this initiative to improve the density and distribution of those respective species. A solid stewardship program will make certain that the conservation goals originally created are achieved.

## **PROJECT LOGIC FRAMEWORK.**

The objectives developed for the Eucha/Spavinaw Watershed Protection Initiative are:

- To permanently protect 969.11 acres within the watershed through the purchase and/or donation of conservation easements
- To leverage Section 319(h) and TMUA funding with CREP funds to protect an additional 2,959 acres within the watershed
- To establish requirements for land management techniques to be utilized on the identified properties that effectively prevent water pollution and protect habitat
- To cultivate meaningful and valuable partnerships with local, state, tribal, and national organizations dedicated to the protection of water quality and watershed viability
- To improve endangered and threatened species distribution by increasing the carrying capacity of local habitat, leading to the eventual delisting of these regional species
- To integrate local watershed issues with regional/statewide issues
- To provide a direct link between local decision making and acquired experience and expertise by encouraging local participation and community involvement
- To advise stakeholders at all levels of the function, importance, and cost of the watershed level approach to water and habitat protection
- To integrate land conservation and other voluntary measures with regulatory approaches to watershed protection

## **PROJECT TASKS**

**Task 1:** Collaborate with partners to determine focus area and identify key targeted properties for protection. The targeting efforts of the Oklahoma Conservation Commission will be reviewed to determine clearly defined focus areas and mutually established priorities for protection. This will identify the highest priority parcels to be targeted for protection. The result will be improved water quality and reestablishment of viable populations of endangered and threatened species.

*Deliverable: Map/priority list of identified parcels of land.*

**Task 2:** Conduct outreach and coordinate with willing landowners for easement acquisition and prior due diligence. Outreach efforts will increase landowner awareness and create relationships with landowners which will further collaboration. The result will be continued private property ownership and the creation of a network of permanently protected land.

*Deliverable: Annual letter report documenting outreach efforts*

**Task 3:** Draft site-specific land management requirements to be included in all conservation easements. Management requirements will include but not be limited to the creation of riparian buffers, cattle excluded from waterways, poultry litter not spread in buffers or exceeding sustainable levels on entire property. The land management requirements will result in water quality improvement leading to healthier habitat, cleaner and more affordable drinking water. It is expected that 70-80% of all surface level contaminants will not enter the water on each protected property

*Deliverable: Land management practices list to be included in conservation easements*

**Task 4:** Organize a Spavinaw Watershed Assessment Team to involve all stakeholders in prioritizing conservation efforts. Stakeholders will acquire and share knowledge, voice concerns, and guide the ongoing projects relevant to the watershed. Goals, priorities, and concerns for all groups relevant to the watershed will be addressed and achieved. A model for establishing a collaborative source water and habitat protection program will be created.

*Deliverable: List of Team Members; Meeting Minutes; Goals Document*

**Task 5:** Develop watershed protection program literature and presentation. Present a successful case study on collaborative watershed protection program at three regional and two national conferences and/or workshops.

*Deliverable: Letter report documenting presentations; Copies of program literature*

**Task 6:** Monitoring and assessing progress toward the environmental goals and results of these initiatives will primarily be evaluated through several separate sources. The number of landowners who choose to participate, and the respective number of critical watershed properties protected, is a primary measure of program effectiveness. Resulting water quality in the Eucha/Spavinaw basin will be monitored by numerous agencies, which will partner in this effort. These include the United States Geological Survey, the City of Tulsa, the Oklahoma Conservation Commission, and the Oklahoma Water Resources Board. Water quality improvement resulting from this project will be long-term and may not be apparent within the time-frame of this project.

*Deliverable: Annual letter report with the number of landowners who choose to participate; QAPP; Water Quality Summary Reports from monitoring agencies*

**Task 7:** Project Reporting.

*Deliverable: Semi-annual reports; Final Report*

**Task/Deliverable Schedule**

<b>Task</b>	<b>Deliverable</b>	<b>Due Date</b>
Task 1: Refined Target Areas	- Map/Priority List	- 11/30/07
Task 2: Program Outreach	- Annual letter report documenting outreach efforts	- 10/31/08 (and each year thereafter)
Task 3: Land Management Requirements	- List of land management requirements to be included in conservation easements	- 11/30/07
Task 4: Spavinaw Watershed Assessment Team	- List of Team Members	- 10/31/07

	- Meeting Minutes - Goals Document	- Quarterly - 06/30/08
Task 5: Program materials and presentations	- 3 copies of all program materials - Letter report documenting presentations	- 04/30/10 - 09/30/10
Task 6: Monitoring and Assessment	- QAPP - Copies of all relevant water quality reports issued within the project period - Annual letter report with the number of landowner who choose to participate	- 12/31/07 - Semi-annually  - 10/31/08 (and each year thereafter)
Task 7: Project Reporting	- Semi-Annual Reports - Final Project Report	- January/July - 12/31/10

### EXPECTED ENVIRONMENTAL RESULTS

To provide estimates for the level of potential loading reductions that are expected from the implementation of this program, the EPA's Spreadsheet Tool for Estimating Pollutant Load (STEPL), was employed by the Oklahoma Conservation Commission. This initiative will result in a 22% load reduction in kg P/year. See Table 3. Modeling has shown that with properly functioning riparian buffers in place the inputs of pollutants to streams and rivers and ultimately, to the reservoirs is substantially reduced.

**Table 3: Load Reductions Resulting from this Project**

<b>WBP Load Reduction goal:</b>			<b>19,216 kg P/Year</b>
<b>Project Source</b>	<b>Funding Amount</b>	<b># Acres in Conservation Easements</b>	<b>Expected Load Reduction kg P/year</b>
319(h) Implementation Project ** (Federal easement acquisition)	\$403,664	269.11	293
City of Tulsa Funds for Conservation Programs (easement acquisition)**	\$1,050,000	700.00	761
CREP Funds *	\$5,814,656	2,959.11	3216
<b>TOTAL FUNDS LEVERAGED FOR THIS PROJECT</b>	<b>\$7,268,320</b>		
<b>TOTAL ACRES IN CONSERVATION EASEMENTS</b>		<b>3,928.22</b>	
<b>EXECTED LOAD REDUCTION</b>			<b>4270</b>
* # Acres based on a cost of \$1965/acre – standard for CREP			
** # Acres based on \$1,500/acre or ½ the appraised value of land which is generally \$3,000			

The WBP includes a detailed list of ongoing and planned activities within the watershed and the associated load reduction as of February 2007. Watershed modeling has predicted that implementation of several facets of the WBP, including this initiative, will ultimately result in the achievement of the defined water quality objectives. When other factors such as the increase in

contiguous protected riparian area, additional, complimentary practices that could be implemented using WRP, EQIP, and other similar programs that can be promoted by the various partners, the result will be greater loading reductions.

### **MONITORING AND ASSESSMENT**

Monitoring and assessing progress toward the environmental goals and results of this initiative will be evaluated through several separate sources. Resulting water quality in the Eucha/Spavinaw basin will be monitored by numerous agencies, which will partner in this effort. These include the United States Geological Survey, the City of Tulsa, the Oklahoma Conservation Commission, and the Oklahoma Water Resources Board. The frequency of occurrence of taste and odor complaints concerning the drinking water in the region will serve as a level of program measurement directly related to the public perception of the effectiveness of the applied measures. Importance will also be placed on input and feedback received from workshop attendees and sponsors, and the degree to which any local workshops result in local watershed protection efforts. Ongoing water quality monitoring efforts are detailed in the WBP for the Eucha/Spavinaw watershed. Monitoring of all conservation easements to ensure compliance will be conducted by Land Legacy.

### **MEASURES OF SUCCESS**

The overall measure of success for activities in the Eucha/Spavinaw Watershed is the restoration of beneficial use support. These results are likely beyond the scope of this three-year project. The number of landowners who choose to participate, and the respective number of critical watershed properties protected, is a primary measure of program effectiveness. More attainable measures of success specific to the activities in the workplan are:

- Not less than half of all properties identified as highest priority within the watershed will participate in the program
- Establishment of permanent conservation easements which will ultimately result in a 22% load reduction of phosphorus from the Oklahoma portion of the watershed.
- Establishment of permanent conservation easements on 969.11 acres of riparian corridors within the watershed
- Protect an additional 2,959.11 acres through the Conservation Reserve Enhancement Program for additional watershed protection efforts along Spavinaw Creek.

### **BUDGET:**

Match:	\$1,250,000
319(h) Federal funding:	<u>\$600,000</u>
Total Funding:	\$1,850,000

**Table 5. DETAILED BUDGET INFORMATION**

SECTION A- BUDGET SUMMARY				
Watershed Project, Activity or Work Plan Element	Federal	Non-Federal	Total	
1. Land Conservation	\$403,664	\$1,110,000	\$1,513,664	
2. Outreach and Education	\$113,524	\$80,000	\$193,524	
3. Monitoring and Assessment	\$82,812	\$60,000	\$142,812	
Totals	\$600,000	\$1,250,000	\$1,850,000	
SECTION B- BUDGET CATEGORIES				
Budget Categories	Project, Activity or Work Plan Element			Total
	(1)	(2)	(3)	
a. Personnel	\$51,000	\$161,095	\$65,035	\$277,130
b. Fringe Benefits	\$4,080	\$12,887	\$5,203	\$22,170
c. Travel	\$4,920	\$15,267	\$19,510	\$39,697
d. Equipment	\$ -	\$ -	\$ -	\$ -
e. Supplies	\$ -	\$4,275	\$ -	\$4,275
f. Contractual	\$ -	\$ -	\$ -	\$ -
g. Construction	\$ -	\$ -	\$ -	\$ -
h. Other (easement acquisition/due diligence)	\$1,453,664	\$ -	\$53,064	\$1,506,728
i. Total Direct Charges (sum line a-h)	\$1,513,664	\$193,524	\$142,812	\$1,850,000
j. Indirect Charges	\$ -	\$ -	\$ -	\$ -
TOTALS (sum line i-j)	\$1,513,664	\$193,524	\$142,812	\$1,850,000

## **PAST PERFORMANCE**

Following is a list of federally funded assistance agreements and progress toward achieving expected results:

Cooperative Agreement with the U.S. Fish and Wildlife Service Ozark Plateau National Wildlife Refuge (OPNWR), City of Tulsa, and The Nature Conservancy (TNC); In 2003, Land Legacy entered into an agreement with the USFWS, City of Tulsa, and TNC allowing the USFWS to assist in the management of properties owned by each organization for the benefit of threatened and endangered species. Progress toward achieving expected results is measured by the USFWS and reported annually to each agreement partner.

Cooperative Agreement with the U.S.D.A. Natural Resources Conservation Service (NRCS); Farm and Ranchlands Protection Program; Chitwood Farms: In 2004, Land Legacy and the NRCS entered a cooperative agreement whereby federal funding was provided to purchase a conservation easement on 100 acres of farmland near Oklahoma City. Progress toward achieving expected results was measured foremost by the successful purchase of an easement on the property. In addition to a copy of the filed easement, Land Legacy provides annual reports to the NRCS on the current state of the property, particularly regarding compliance with the terms of the easement.

Cooperative Agreement with the NRCS; Farm and Ranchlands Protection Program; Valley Park: In 2005, Land Legacy and the NRCS entered a cooperative agreement whereby federal funding was provided to purchase a conservation easement on 98 acres of farmland near Tulsa, Oklahoma. Progress toward achieving expected results was measured foremost by the successful purchase of an easement on the property. In addition to a copy of the filed easement, Land Legacy provides annual reports to the NRCS on the current state of the property, particularly regarding compliance with the terms of the easement.

Cooperative Agreement with the NRCS; Farm and Ranchlands Protection Program; Fort Sill Private Lands Initiative: In 2006, Land Legacy and the NRCS entered a cooperative agreement whereby federal funding was provided to purchase a conservation easement on 300 acres of ranchland near Lawton, Oklahoma and adjacent to Fort Sill Army Post. Progress toward achieving expected results was measured foremost by the successful purchase of an easement on the property. In addition to a copy of the filed easement, Land Legacy provides annual reports to the NRCS on the current state of the property, particularly regarding compliance with the terms of the easement. Since Ryder Ranch was completed, five other properties adjacent to Fort Sill have been protected through agreement with the USDA.

Cooperative Agreement with the U.S. Army to implement the Fort Sill Army Compatible Use Buffer (ACUB) Program: In 2006, Land Legacy and the U.S. Army entered a cooperative agreement whereby federal funding is provided to purchase conservation easements on open space properties surrounding the Fort Sill Army Installation in southwestern Oklahoma. Progress toward achieving expected results is measured in the number of acres protected through the acquisition of conservation easements. (A total of 20,000 are targeted for protection.) Copies of filed easements, quarterly progress reports, and annual progress reports are provided to the U.S. Army to further measure progress toward achieving expected project results. As of July 2007, approximately 1,112 acres have been protected through easement acquisition, and an additional 230 acres is under contract and expected to close later this year.

## **PROGRAMMATIC CAPABILITY**

Following is a description of federally funded assistance agreements relevant to the proposed program which demonstrate the ability and expertise of Land Legacy and associated partners to perform the defined tasks:

Cooperative Agreement with the NRCS; Farm and Ranchlands Protection Program; Chitwood Farms: This agreement provided \$180,000 for the purchase of a conservation easement on a 100-acre tract. An easement on the property was successfully acquired in September 2004. All reporting obligations associated with the acquisition were completed at that time. Annual monitoring reports to the NRCS are required, and the first was provided in October 2005.

Cooperative Agreement with the NRCS; Farm and Ranchlands Protection Program; Valley Park: This agreement provided \$480,000 for the purchase of a conservation easement on a 98-acre tract. An easement on the property was successfully acquired in December 2005. All reporting obligations associated with the acquisition were completed at that time. Annual monitoring reports to the NRCS are required, and the first was provided in December 2006.

Cooperative Agreement with the NRCS; Farm and Ranchlands Protection Program; Ryder Ranch: This agreement provided \$398,000 for the purchase of a conservation easement on a 98-acre tract. An easement on the property was successfully acquired in July 2006. All reporting obligations associated with the acquisition were completed at that time. Annual monitoring reports to the NRCS are required, and the first will be provided in July 2007.

Cooperative Agreement with the U.S. Army to implement the Fort Sill Army Compatible Use Buffer (ACUB) Program: This agreement provides up to \$16,000,000 for the purchase of conservation easements on 20,000 acres of open space surrounding Fort Sill. Copies of acquired easements, quarterly progress reports, and annual progress reports must be provided to the US Army. As this agreement was not executed until July 2006, the first quarterly progress report was completed in October 2006.

Land Legacy has extensive experience related to the proposed project goals and tasks. Namely, we have successfully acquired conservation easements on nearly two dozen properties throughout Oklahoma. We have successfully completed all initial requirements such as easement drafting and landowner negotiation, due diligence, baseline inventories, and easement recordation. Further, we have successfully completed all ongoing annual obligations to monitor each easement for potential violations. Toward that goal, Land Legacy closely follows guidelines and procedures recommended by the Land Trust Alliance.

Additionally, Land Legacy has considerable experience in conducting workshops and seminars on land conservation tools and techniques, effective coalition building, and partnering with federal agencies. We have assisted the Kerr Center for Sustainable Agriculture and the American Farmland Trust with three farmland preservation workshops in Oklahoma and Tennessee. Additionally, we have conducted workshops for the Land Trust Alliance (LTA) at the 2004 LTA Rally and the 2006 LTA Southwest Regional Conference. Land Legacy and EPA Region 6 staff partnered on a 2005 presentation regarding the use of conservation easements for storm water management. Land Legacy staff members frequently make presentations to organizations throughout the region on land conservation practices and programs.