

***Reduction of Sediment for Fourteen Species of Greatest Conservation Need  
through Riparian and Stream Habitat Restoration***

***Middle Fork Saline River Watershed, Garland County, Arkansas***

*Project Lead: Joy DeClerk, Ouachita Rivers Project Manager*

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**Project Summary:**

The Middle Fork Saline River is impacted by the removal of streamside vegetation, habitat loss as a result of development, incompatible forestry, and nutrient and sediment loading from both point and non-point sources. The Nature Conservancy plans to implement on-the-ground stream and riparian restoration activities to directly improve habitat for 14 aquatic species of greatest conservation need, including 11 mussel, three fish species (table 2) and a host of game species including smallmouth, largemouth, and spotted bass. The Nature Conservancy proposes, through SWG funding, to complete all streamside riparian restoration necessary for the in-stream work to be accomplished.

**Principal Project Partner:**

- **Arkansas Game & Fish Commission** – Stream Team, Jim Ahlert [ahlert@agfc.state.ar.us](mailto:ahlert@agfc.state.ar.us)  
Ph: 1-877-967-7577

**Total Project Cost: \$155,000**

**Total Amount Requested: \$77,500**

**Total Matching Funds/In-kind Services: \$77,500**

**Matching Funds Sources: The Nature Conservancy, Mountain Valley Water Company, Private Landowners, and Volunteers.**



This restoration project will address the following funding priorities outlined in the Arkansas Wildlife Action Plan:

*To maintain or increase habitat quality in small stream-river riparian forest, seeps, cane.*

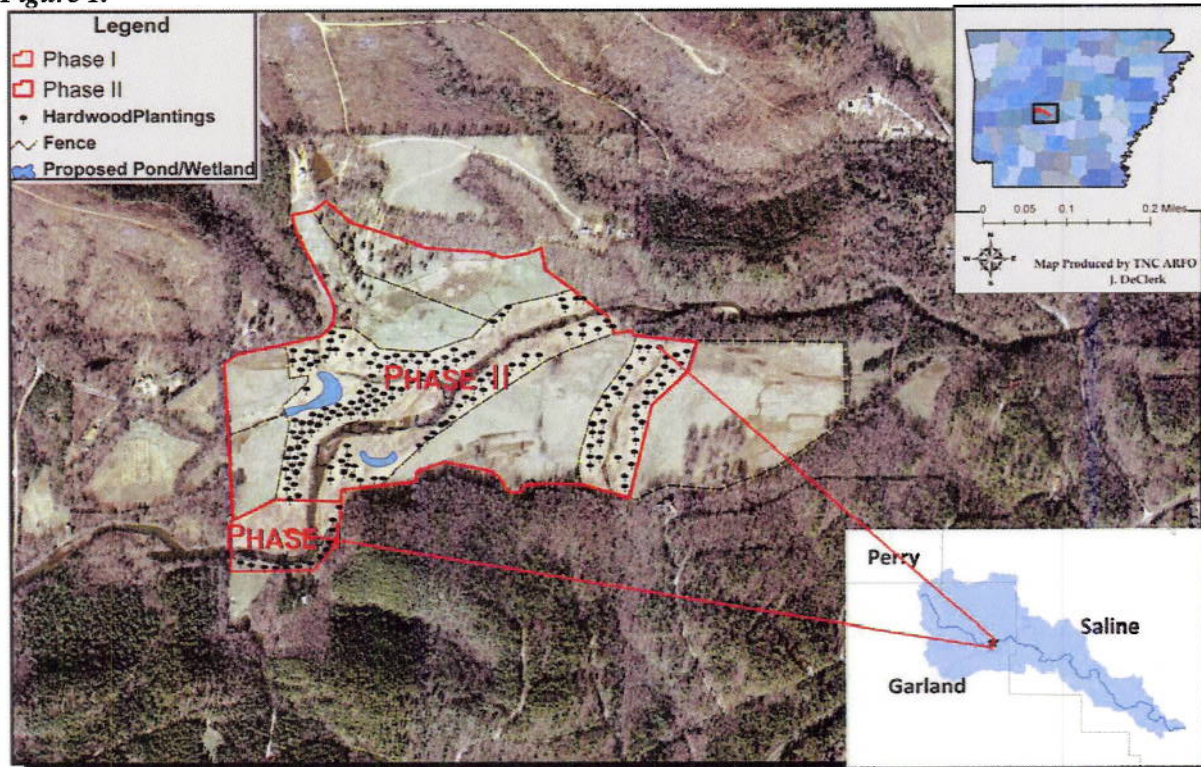
*To restore, enhance and/or maintain wetland integrity.*

*To survey headwater aquatic biodiversity.*

*To reduce anthropogenic impacts to headwater streams.*

**Project Area:** The project is located in the Ouachita Ecoregion, Middle Fork Saline River watershed, Garland County, Arkansas; and is targeted to address both small river riparian terrestrial habitat, headwaters aquatic habitat of the Saline River (see Figure 1), and fourteen species of greatest conservation need (See Table 1).

**Figure 1.**



**Method:**

The proposed project is targeted to complete work already underway through implementation of riparian restoration necessary for completion of the remaining in-channel restoration. Phase I was funded by the U.S. Fish and Wildlife Service Private Stewardship Grant program in September, 2007. The first phase, currently underway, includes completion of the formal restoration and monitoring design and implementation of restoration activities for approximately 800 feet of linear bank and riparian area at the upstream portion of the site. (The completed restoration design is available upon request.) Phase II is focused primarily on the downstream portion, continuing restoration through 1900 feet of livestock pasture and braided channel, until returning to a stable stream at the end of the site. The in-stream construction work for Phase II appears to be selected for funding in 2009 from the Southeast Aquatic Resource Partnership (SARP). The Nature Conservancy is proposing to utilize SWG funding to complete the riparian restoration work necessary to begin Phase II in-stream work. The proposed restoration site is a privately owned, active cattle farm. There is significant, rapid erosion occurring on both sides of the



river throughout the property due to riparian vegetation loss and upstream sources of sediment. The Nature Conservancy has been conducting a study for the past three years in which this reach of stream has been surveyed and monitored to determine sediment loss and structural change, fish assemblage, and vegetation composition in preparation for restoration activities. The channel is characterized by high bank erosion rates, excessive deposition occurring as both longitudinal and transverse bars, and annual shifts of the bed location as it tries to route the incoming sources of sediment. Total sediment loss from this reach was 1772 tons over a one-year period from June 2006 - 2007, or approximately 71 dump truck loads.

The emphasis of this project is restoring a healthy and productive riparian corridor including enhancement of existing low-lying habitat and relic channel for both wetland function and off-watering sources for livestock. This part of the project is integral to the successful re-creation of a single-thread, stable channel from the braided channel that exists now. The riparian restoration design includes assistance with approximately 9,400 feet of riparian fencing and pasture cross-fencing for the re-growth of a productive riparian corridor to enhance stream stability and to implement a rotational grazing plan. The Garland County Conservation District has partnered on this project by providing a comprehensive farm conservation plan with several options tailored for this particular landowner's property. This farm plan includes re-planting approximately 32 acres of riparian area and creating two alternative watering sources for cattle, including a well and trough system and pond development with heavy use areas. Bio-engineering will include restoring native vegetation to the streambank of a perennial tributary to the Middle Fork that runs through the property with willow live-staking, and riparian corridor re-forestation of native trees to promote long-term protection and wildlife habitat. Off-channel wetland creation and species planting is also included in the design. In the overall restoration project, long-term biological sampling of the Middle Fork will be used to determine the link between changes in physical habitat resulting from restoration with changes in macroinvertebrate and fish communities. Pre-project sampling has already occurred; contracting costs for processing the pre-project samples is included in this project proposal.

***Measurable Outcomes/Objective:***

The goal of this project is to assist in the elimination of 1,770 tons of annual sediment loss throughout this reach and improve habitat for miles downstream of the impacted site. The completed project will restore 32 acres of riparian and floodplain area, and exclude at least 350 head of cattle from the stream. The project will be show cased to private landowners, land trusts, and other stakeholders in the watershed as a demonstration of successful restoration techniques that can be replicated in other areas of the Upper Saline watershed. This project would directly address the problem and would be the first of its kind in this watershed. The Nature Conservancy intends to enter into a "held harmless" agreement with the cooperating landowner so that practices installed through financial assistance from the program will be maintained through the life of ownership of property.

***Database Update:*** The Nature Conservancy commits to updating the Comprehensive Wildlife Conservation Strategy (CWCS) database at the conclusion of this project.

***Updating the Scientific Community:*** The Nature Conservancy anticipates to be prepared to present this project and results to the scientific community by fall of 2011.

***Updating the Public:*** The Nature Conservancy commits to engendering some positive publicity about the project through video, pictures, and at least one article in our member's newsletter.

***Leverage of Existing Resources:***

This project has a large and diverse number of partners involved with a large portion of work already complete.

- ✓ *U.S. Fish & Wildlife Service* Private Stewardship Grant (PSG) Program: Phase I of this project has been funded at approximately \$92,925
- ✓ *Arkansas Game & Fish Commission, Stream Team* – Technical Assistance, use of equipment, financial assistance provided in Phase I, potential financial assistance for Phase II.
- ✓ *University of Central Arkansas* – biological monitoring.
- ✓ *Hendrix College* – student intern.
- ✓ *Arkansas Department of Environmental Quality* – biological monitoring field assistance and use of equipment.
- ✓ *USDA/Garland County Conservation District* – development of farm conservation plan and technical assistance with implementation of conservation practices.
- ✓ *Arkansas Highway and Transportation Department* – Potential financial contribution for supplies and monitoring costs.
- ✓ *Mountain Valley Spring Water Company* – supply of rock for the project.
- ✓ *Private Landowners* – use of equipment, fencing, labor, and financial contribution.
- ✓ *Arkansas Forestry Commission* – use of equipment, supply of vegetation and seed.
- ✓ *Alliance for an Improved Middle Fork (AIM), Hot Springs Village Audubon Society, and Boy Scouts of America* – Volunteer workdays.

**Table 1. Budget**

Category	Funds Needed	TNC/Match
Salaries and Benefits	\$ 32,063	\$ 16,856
Operating Expenses	\$ 30,945	\$ 46,152
Capital Expenses	\$ -	\$ -
<b>Subtotal</b>	<b>\$ 63,008</b>	<b>\$ 63,008</b>
Indirect Cost (23%)	\$ 14,492	\$ 14,492
<b>Total</b>	<b>\$ 77,500</b>	<b>\$ 77,500</b>

\* The Nature Conservancy has a current 23% Negotiated Indirect Cost Rate (NICRA) that is accepted by USFWS.

**Table 2. Aquatic Species of Greatest Conservation Need, Middle Fork Saline River:**

	Scientific Name	Common Name	Global Status	State Status
Fish	<i>Noturus lachneri</i>	Ouachita madtom	G2	S2
	<i>Crystallaria asprella</i>	Crystal darter	G3	S2?
	<i>Percina uranidea</i>	Stargazing darter	G3	S3
Mussels	<i>Alasmidonta marginata</i>	Elktoe	G4	S3
	<i>Cyprogenia aberti</i>	Western fanshell	G2	S2
	<i>Lampsilis ornata</i>	Southern pocketbook	G5	S1
	* <i>Lampsilis powellii</i>	Arkansas fatmucket	G1G2	S2
	<i>Toxolasma lividus</i>	Purple lilliput	G2	S2
	<i>Villosa arkansasensis</i>	Ouachita creekshell	G2	S2
	<i>Obovaria jacksoniana</i>	Southern hickorynut	G1G2	S2
	<i>Lampsilis abrupta</i>	Pink mucket	G2	S2
	<i>Pleurobema cordatum</i>	Ohio pigtoe	G3	S2
	<i>Pleurobema rubrum</i>	Pyramid pigtoe	G2	S2
	<i>Ligumia recta</i>	Black sandshell	G5	S2



**Table 3. Other sensitive species collected on-site.**

Species	Common name	Notes
<i>Etheostoma collettei</i>	Creole darter	found in headwaters
<i>Etheostoma whipplei</i>	Redfin darter	large pop. found in clear rock streams, pool and riffle
<i>Etheostoma zonale</i>	Banded darter	moderate currents
<i>Erimyzon oblongus</i>	Creek chubsucker	sensitive to siltation, eats algae and invertebrates
<i>Labidesthes sicculus</i>	Brook silverside	invertivore, prefers clear water

**Table 4.**

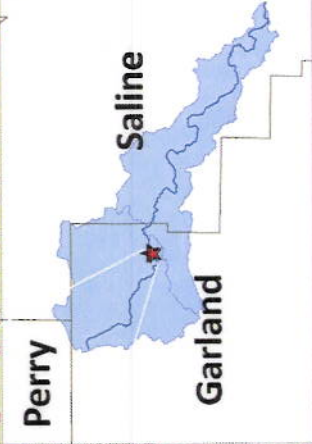
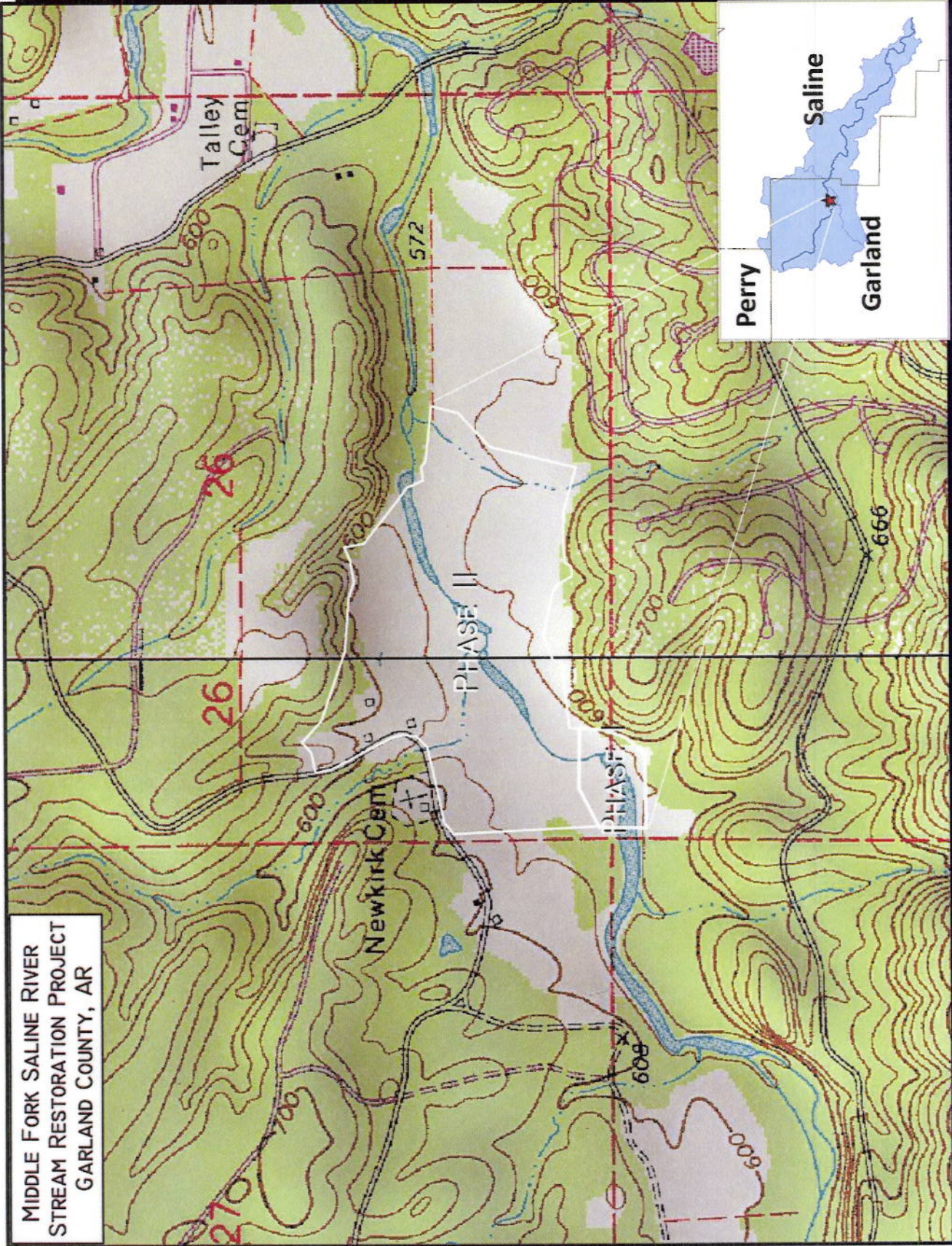
Deliverables Calendar:				
Task	Timeframe	Cost	Match	Total
1. Creation of pond.	Months 1-3	\$ 23,760	\$ 19,000	\$ 42,760
2. Well installation.	Months 2-4	\$ 12,225	\$ 9,600	\$ 21,825
3. Pipeline & Water Storage.	Months 2-4	\$ 11,575	\$ 11,200	\$ 22,775
4. Fencing.	Months 2-5	\$ 19,475	\$ 12,100	\$ 31,575
5. Pre-project monitoring Report	Months 6-12	\$ 10,000	\$ 10,000	\$ 20,000
6. Trees planted.	Months 5-12	\$ 350	\$ 6,600	\$ 6,950
7. Outreach/site tour/Reporting.	Months 1-24	\$ 115	\$ 9,000	\$ 9,115
<b>Total</b>		\$ 77,500	\$ 77,500	\$ 155,000

**Joy DeClerk**, Ouachita Rivers Project Manager, will be responsible for coordination between partnering agencies and completion of the project. DeClerk has worked as project manager with The Nature Conservancy since April 2005. In her current position she has completed four courses in “Applied Fluvial Geomorphology” and “Natural Channel Design” led by instructor Dave Rosgen, Ph.D. In addition to these courses, DeClerk has a wide array of experience within the Upper Saline Watershed. In 2004-05, she developed a watershed restoration plan addressing non-point source pollution for the upper Saline watershed; in 2006 completed a species threats assessment for the upper Saline ranking identified threats and proposing strategies to abate the threats. She also recently completed an EPA funded, two-year study (2006-08) to quantify and prioritize major sediment sources within the Middle Fork Saline River watershed.

**The Nature Conservancy** has a great interest and knowledge in watershed restoration, and has successfully planned and implemented many watershed projects across the country, including Arkansas. This experience is crucial in generating public involvement for watershed restoration across the state. Furthermore, the Conservancy’s Arkansas Field Office has a successful track record in leveraging limited conservation dollars through collaborations with multiple partners toward measurable conservation successes.



**MIDDLE FORK SALINE RIVER  
STREAM RESTORATION PROJECT  
GARLAND COUNTY, AR**



ARKANSAS FIELD OFFICE  
601 NORTH UNIVERSITY AVE.  
LITTLE ROCK, AR 72205

**Legend**

Restoration Phases Exhibit A

NAME	Symbol
Phase I	[Symbol]
Phase II	[Symbol]

012350 500 Feet  
+++++

Map Produced by TNC ARFO  
J. DeClerk

LOCATIONAL MAP

JANUARY, 2009

DATUM: NAD83

PROJECTION: UTM\_ZONE 15N