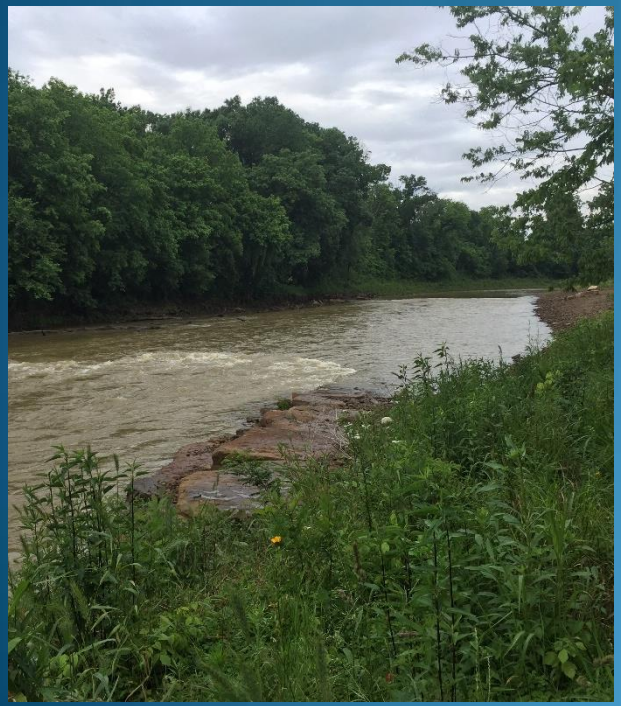
Public Water Supply & Agriculture: Solving Non-Point Source Pollution Problems Together

West Fork White River Watershed Initiative



Sandi J. Formica, Executive Director
Watershed Conservation Resource Center

Governor's Conference on the Future of Water in Kansas
Hilton Garden Inn and Conference Center,
Manhattan, Kansas, November 8-9, 2017

Watershed Conservation Resource Center

WCRC

Who Are We?

- 501 (C)(3) Non Profit Organization
- Located in Fayetteville, Arkansas
- Specialize in
  - Stream and River Restoration
  - Watershed Assessment
  - Watershed Planning
- Provide assistance to Government Agencies, Local Municipalities, Watershed Groups, Landowners, Water Districts, other NGOs, and more
- 13 years old (founded in 2004) with 10 staff persons

West Fork White River Watershed Initiative

A 2016 RCPP Project

- **RCPP is a USDA Program**
  - Regional Conservation Partnership Program "RCPP"
  - "….to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales"
  - Objective was to combine NRCS programs
- **Application Submitted July 2015**
- **National Competition**
  - 265 Applications
  - 84 Projects Selected
- **Contract Signed September 2016**
- **Total Project Funding – $8.8 Million**
  - $4.3 federal award
  - $4.5 cash and in-kind

Restored Wetlands along WFWR

West Fork White River Watershed Initiative

Project Partners

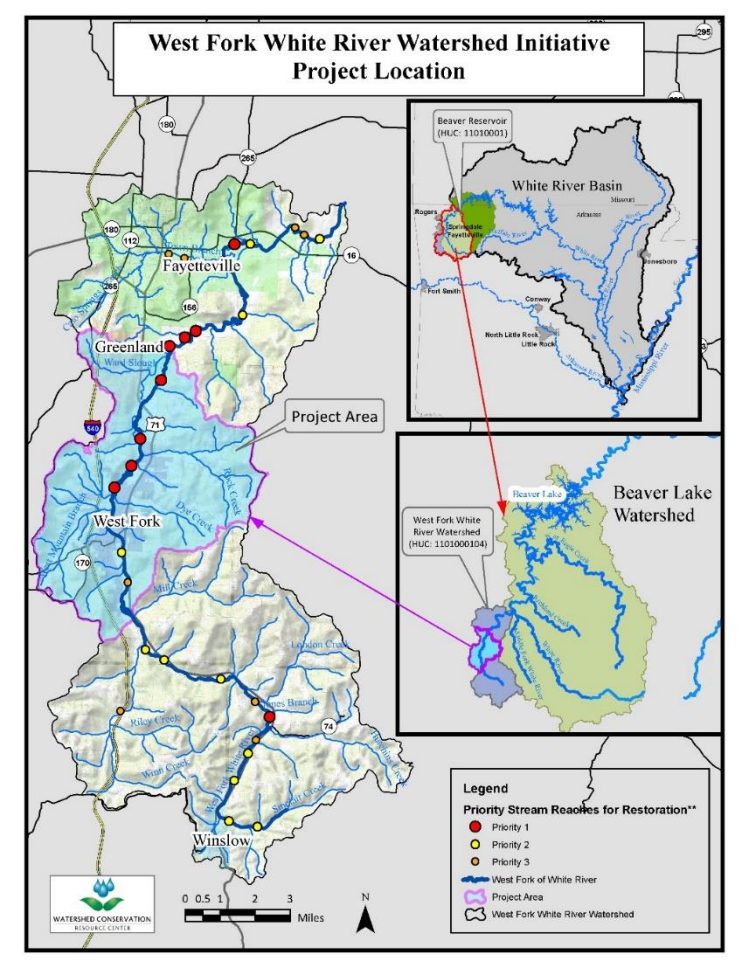
with the USDA Natural Resource Conservation Service (NRCS)

- **Watershed Conservation Resource Center (Lead)**
- **Beaver Watershed Alliance (Outreach)**
- **Beaver Water District (provided 27% of match)**
- **Walton Family Foundation (provided 45% of match)**
- Northwest Arkansas Land Trust
- Arkansas Game and Fish Commission
- City of Fayetteville
- City of West Fork
- Arkansas Natural Resources Commission
- Arkansas Forestry Commission
- Arkansas Farm Bureau
- Cooperative Extension Service
- Ozark Water Watch
- Washington County Conservation District

West Fork White River Watershed Initiative

Project Focus Area

- West Fork White River (WFWR)
  - Major Tributary to White River that forms Beaver Lake – The drinking water source for over 420,000 residents of NW Arkansas
  - Priority for sediment and phosphorus reduction
    - Mississippi River Basin Critical Conservation Area
    - Impaired stream on the state 303 (d) List
    - State non-point source program priority for nutrient reduction
- Project focus is one-third of WFWR Watershed
  - Highest concentration of priority sites for restoration
  - Creates potential funding opportunity for other areas in the future



West Fork White River Watershed Initiative

Project Included Three Components

- PL-566 Watershed Program:
  - Turn-key projects to restore reaches of river with multiple landowners
  - Enables restoration of agricultural lands and other properties
- EQIP Program:
  - Implementation of Best Management Practices or BMPs
- Monitoring Program:
  - Evaluate Improvements

West Fork White River Watershed Initiative

PL-566 Watershed Program

Main Objective is to Restore Reaches of River

- Improve Water Quality
- Enhance Fisheries and other Wildlife
- All landowners adjacent to streams are eligible

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Project Outcomes: PL-566 Watershed Program

- Restore 1 to 2 miles of river and streams
- Restore a minimum of 2 to 4 miles of riparian buffers
- Achieve 75% reduction of sediment and nutrient loads from accelerated streambank at restored sites
  - 3,000 to 7,000 tons sediment/year
  - 1,500 to 3,500 lbs of phosphorus/year
- Restore wetlands in adjacent floodplain
- Obtain 5 conservation easements

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NRCS EQIP Program:
Implementation of Best Management Practices & Development of Conservation plans

- Conduct Outreach
  - Landowner presentations
  - Site Visits
  - Stream Restoration Tours
  - Newsletters
- Develop Conservation Plans
  - Agricultural
  - Forestry
- Eligible Landowners Apply for Cost-Share to Implement Recommended BMPs

West Fork White River Watershed Initiative

Project Outcomes: NRCS EQIP Program

- Interface with 200 individual landowners
- Develop 150 conservation plans
- Implement a minimum of 100 to 300 EQIP practices

Cattle exclusion fencing and alternative watering source

West Fork White River Watershed Initiative

Monitoring Program to Evaluate Improvements

- Evaluate sediment and nutrient load reductions from river and streambank restoration
  - At selected restoration sites
  - Collect and analyze streambank samples
  - Collect streambank profile data before and after restoration
  - Estimate erosion rates and sediment and nutrient loadings prior to restoration and following restoration

- Conduct WEPP modeling on pasture lands where BMPs will be implemented

- Collect and evaluate stream gage data, biological, and water quality data

West Fork White River Watershed Initiative

Keys to Project Funding

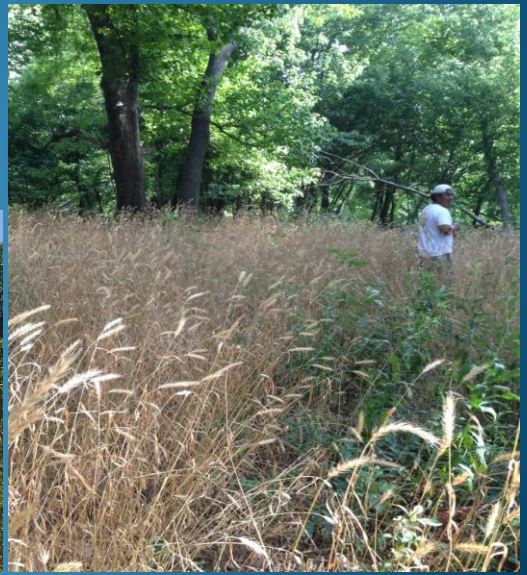
- WCRC had established partnerships with
  - Beaver Water District
  - Beaver Watershed Alliance
  - Walton Family Foundation
  - NRCS
  - Landowners, municipalities, government agencies, and more
- Project built on solid scientific foundation
  - Watershed assessment and planning began in 1998
- Track record of successful stream restoration projects in NW Arkansas

West Fork White River Watershed Initiative

Keys to Project Funding

Established Partnerships

- Partners share regional conservation and water quality protection goals
  - Implementation of high-quality restoration
    - Protects regional drinking water source
    - Improves water quality
    - Reduces sediment and nutrient loadings
  - Increased conservation in the region, improves quality of life in NW Arkansas
    - Enhances aquatic and terrestrial habitat
    - Improves recreational use of WFWR – boating, fishing, and swimming



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Keys to Project Funding

Established Partnerships

- Implementation of high-quality restoration
  - Reduces land loss – pastures, forest, and parks are saved for generations
  - Protects infrastructure saving municipalities and government millions of dollars

Niokaska Creek at Sweetbriar Park

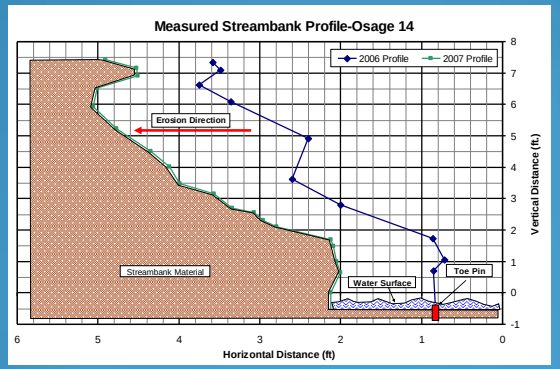
Project protects agriculture, urban & city park lands along with a high-pressure water line

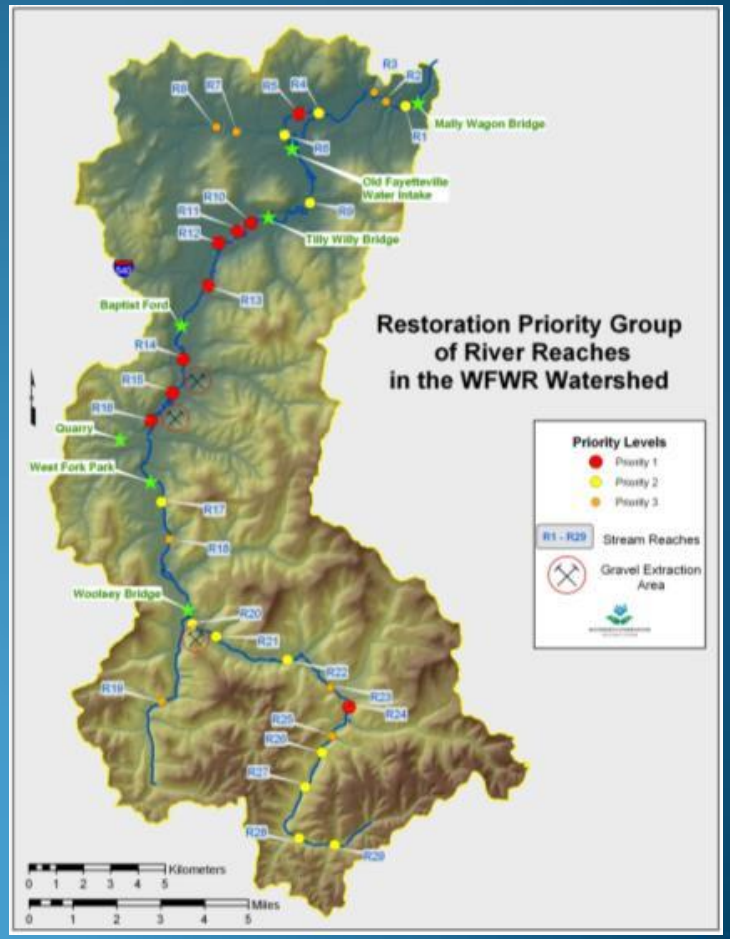
West Fork White River Watershed Initiative

Keys to Project Funding

Project Built on Solid Scientific Foundation

- 2004 WFWR watershed assessment
  - Accelerated streambank erosion contributes 66% of total annual sediment load of 36,000 tons
- 2010 NRCS CPI watershed planning project
  - Identified 29 unstable reaches of river within the WFWR watershed in need of restoration
  - Prioritized sites
- Supports local watershed planning in the Beaver Lake Watershed Protection Strategy





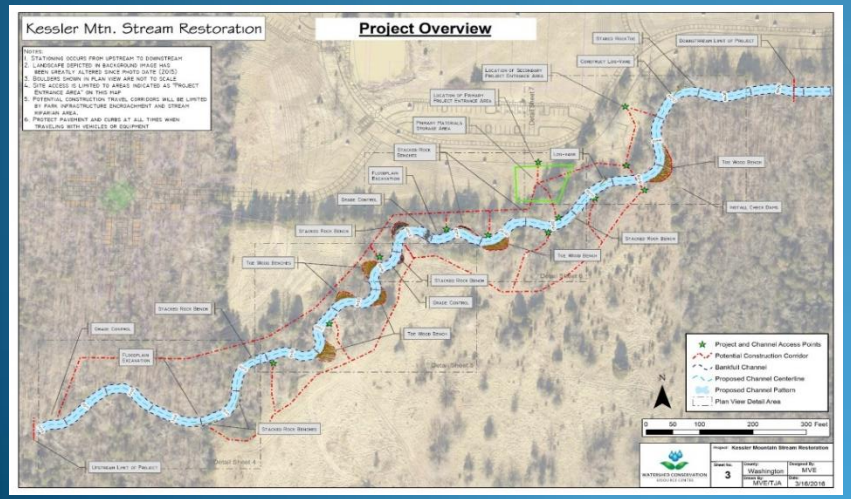
West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Restoration Projects

Use natural channel design principles to develop restoration design; restores channel and riparian area

- Channel restoration design based on stream morphology and reference reach prototype
  - Restores hydrology: construct defined bed features (riffle, run, pool, glide)
  - Accounts for sediment transport
  - Requires heavy equipment construction
  - Requires permits: 404, floodplain, Short-Term Activity



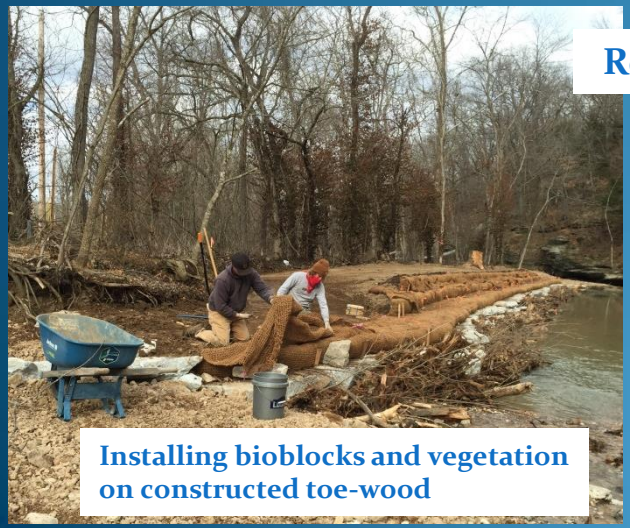
West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Projects

Use natural channel design principles to develop restoration design; restores channel and riparian area

- Riparian areas are restored by integrating vegetation establishment and management into the design
  - Provide erosion control using live plant material
  - Reduces water velocity (manning's "n")
  - Plants are incorporated during construction of flood plain features
  - Use of native plants and removal of invasive plants improves the local ecology



Installing bioblocks and vegetation on constructed toe-wood

Restored floodplain on Tanyard Creek

A few weeks following construction

1.25 years following construction

West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Projects – Beaver Lake Watershed

WFWR Restoration at
Fayetteville Municipal Airport

West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Projects – Beaver Lake Watershed

Completed Construction January 2017
Photo is September 2017

White River Streambank Restoration

West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Projects – Beaver Lake Watershed

West Fork White River Restoration at Dead Horse Mountain

West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Restoration Projects

White River Streambank Restoration

West Fork White River Watershed Initiative

Keys to Project Funding

Established Track Record of Successful Stream Restoration Projects - Beaver Lake Watershed

Project	Area mi^2	Length ft	Age yr	Cost	Sediment Reduced* Ton/yr	T. Phos. Reduced* Lb/yr
West Fork White River Brentwood	18	1,800	8.0	$406,000	1,880	640
White River Downstream Noland WWTP	400	1,000	5.5	$352,000	3,600	3,500
Mullins Creek - urban University of Arkansas	0.75	1,800	5.0	$425,000	52	24
West Fork White River Fayetteville Airport	83	4,600	3.0	$1,360,000	4,072	1,817
West Fork White River Dead Horse Mountain Road	120	2,500 ++	2.0	$550,000	1,860	1,080
Ground Cherry Creek - urban Kessler Mountain Regional Park	0.75	2,000	1.25	$435,000	61	48
White River At the Noland WWTP	400	1,300	0.7	$577,000	3,600	3,200
*Preliminary Results				**Total**	***15,000 ton/yr***	***10,000 lb/yr***

West Fork White River Watershed Initiative

Who are the winners?

- Landowners
  - Stops the loss of valuable agricultural, forested, or park lands
  - Healthy riparian protects land
  - Restored stream features retains more water throughout the year

- Beaver Water District, Cities & Counties of NW Arkansas, the State, the Environment, the public
  - Project will reduces sediment and phosphorus loadings in the watershed and to Beaver Lake, the drinking water source for NW AR
  - Aquatic habitat and terrestrial habitat is improved
  - Recreation opportunities are improved

White River Streambank Restoration

West Fork White River Watershed Initiative

Thank You – Sandi Formica
Watershed Conservation Resource Center

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Mullin's Creek Restoration
University of Arkansas Campus

Ground Cherry Creek Restoration
Kessler Mountain Regional Park