T32-02

Northwest Arkansas Wet Prairie Restoration Project for Henslow's Sparrow and Arkansas Darter

Summary

Audubon Arkansas will restore seasonal wetlands, grasslands, and associated streams at two sites in Northwest Arkansas. The project's goal is to benefit two highly ranked species in the State Wildlife Action Plan, the Arkansas Darter and Henslow's Sparrow. The project will also improve water quality and groundwater recharge. With our partner, Beaver Water District, Audubon will monitor bird, fish, groundwater, and water quality response to restoration efforts. The project will serve as a demonstration site for wet prairie restoration in an urbanizing area.

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Project Partners

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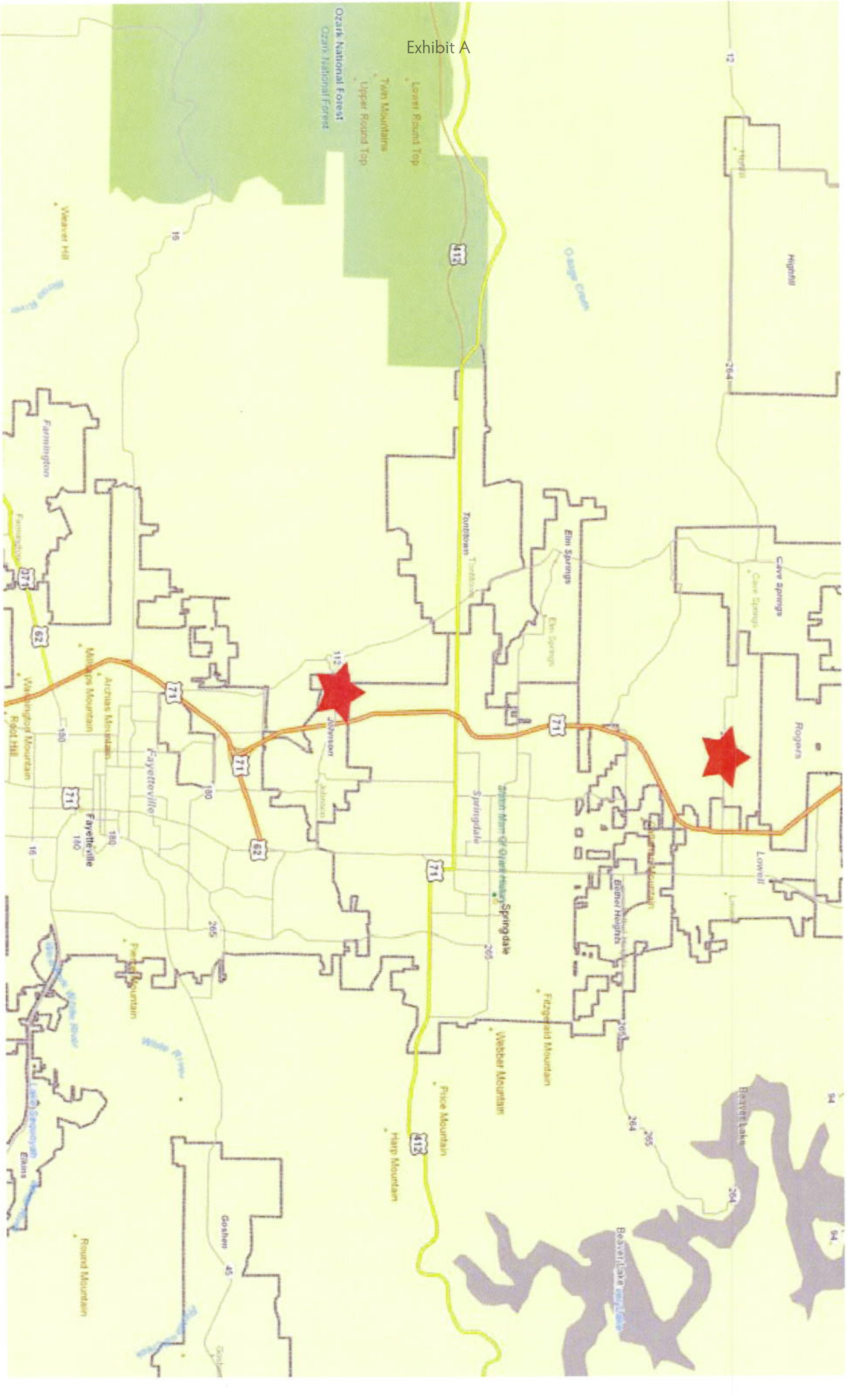
Cost Summary

Total Amount of Project Cost $84,000
Total Amount of SWG request $42,000
Amount and Source of Matching Funds or In-kind Services $42,000
--Audubon Arkansas Matching Funds $18,000
--Beaver Water District Matching Funds $24,000

Exhibit A



Ozark National Forest
Lower Round Top
Twin Mountains
Upper Round Top
Weaver Hill
Osage Creek
Highfill
Farmington
Tontitown
Elm Springs
Cave Springs
Rogers
Johnson
Fayetteville
Springdale
Lowell
Bethel Heights
Archias Mountain
Millsaps Mountain
Washington Mountain
Root Hill
Fitzgerald Mountain
Webber Mountain
Price Mountain
Harp Mountain
Goshen
Round Mountain
Elkins
Beaver Lake
White River

A. Conservation Priorities

These projects specifically address the habitat needs of two identified Species of Greatest Conservation Need, the Arkansas Darter (*Etheostoma cragini*) and Henslow's Sparrow (*Ammodramus henslowii*). The project will integrate SWG priorities with local conservation efforts in Washington and Benton Counties, publicize the Wildlife Action Plan with local advocates and prairie preservation constituents, and provide a model for wet prairie restoration in urbanizing environments. A key component of the restoration plan is citizen science and involvement. This will occur both through planned prairie restoration activities and volunteer-assisted monitoring.

The seasonal wetlands, streams and grasslands at Site 1, Wilson Springs, constitute the single largest remaining block of prairie habitat in the region that is in public ownership. It will be managed by Audubon for public use. Site 2, Beaver Prairie, is owned by Beaver Water District and provides an opportunity for a highly visible public organization in the region to demonstrate prairie restoration techniques. Beaver Water District is centrally located in the Northwest Arkansas metropolitan area near Lowell. Beaver Water District is interested in promoting best management practices (BMP) that protect water quality in the area. The project on this property will promote BMPs in the area and result in similar BMPs within the Beaver Lake watershed.

Restoration of these wet prairies and their headwater streams addresses SWG priorities. These include maintaining the habitat quality of prairies and native grasses, and restoring and enhancing wetland integrity and protection of recharge zones. These sites were chosen because of the threat they face from changing land use and development in Northwest Arkansas. This project's restoration efforts will protect aquatic diversity while reducing potentially devastating human impacts to the headwater streams on-site.

B. Ecoregions and Habitats

Both sites are within the Ozark Highlands (Ecoregion 39). Wilson Springs is located near the junction of Interstate 540 and Arkansas 112 near Fayetteville Arkansas. Beaver Prairie is located near Lowell, Arkansas (see map).

Site 1 Wilson Springs. The 210 acres at Wilson Springs were originally tallgrass prairie with both upland and wetland characteristics. Relatively dry terrestrial habitat occupies a small portion of the southern uplands, with elevations similar to those along the I-540 bypass. Most of the remainder of the terrestrial habitat is a seasonal wetland (or wet-mesic prairie) at lower elevations associated with Clabber Creek and its tributaries. This seasonal wetland has been converted to a fescue monoculture, but it retains numerous ecological indicators different than those of typical upland terrestrial habitats. Perennial wetlands are associated with Wilson Springs, Clabber Creek, and its tributaries. Wilson Springs supports a population of the rare Arkansas Darter (*Etheostoma cragini*) and Henslow's Sparrow (*Ammodramus henslowii*)[1]

Site 2 Beaver Prairie. Beaver Prairie area is 36 acres of tallgrass prairie with both upland and wetland characteristics. The property is divided by an ephemeral stream that serves as the uppermost headwater area of Puppy Creek. The stream channel remains wet most of the year but only flows during precipitation events. Two man-made ponds are located on the property as well as several prairie potholes. Tallgrass prairie has been converted to pasture. The dominant cool season forages are fescue and clover. The dominant warm season forages are Bermudagrass and Johnson grass.

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[1] Holimon et al. 2004. First documentation that Henslow's Sparrow regularly occurs during the breeding and wintering seasons in Arkansas. Journal of the Arkansas Academy of Science, Vol. 58

C. Project Methods

Audubon Arkansas and Beaver Water District manage these two properties and have access to the property for restoration activities.

(1) Audubon Arkansas and Beaver Water District will conduct an ecological assessment of both sites to document current plant, bird, and fish communities.

(2) Audubon Arkansas, Beaver Water District, and a volunteer Steering Committee will develop a long-term management plan that outlines the restoration and management of the conservation areas. The Steering Committee will consist of local experts in prairie ecosystems such as Joseph Neal and Joel Woolbright.

(3) Audubon Arkansas and Beaver Water District will carry out on-the-ground restoration as described in the management plan. Local groups, including school clubs, Audubon volunteers, and Scouts, will be engaged to implement various parts of the management and restoration activates (e.g., invasive plant removal). Restoration will start with site preparation as needed. Specific site preparation techniques will depend on the initial condition of the land and may include disking, multiple herbicide applications, or burning. Site preparation will be followed by restoring microtopography. This work will be followed by seeding local genotypes of species appropriate to the hydrologic gradient - marsh to wet prairie to dry-mesic prairie. (Local genotypes are best adapted to local environmental conditions.) Native plant species to be propagated include big bluestem and Indian grass on upland sites, and cordgrass and gamma grass on wet sites. Over the next several years, management and natural succession will lead to establishment of a stable plant community. Native willows will be established in riparian areas where appropriate.

(4) Monitoring will include the response to restoration of: macroinvertebrates, birds, fish, and groundwater/surface water. We will employ standard monitoring techniques that we have used for similar projects.

(5) Outreach materials for the public and volunteers will be developed and focus on the historical and current importance of wet prairie ecosystems and associated flora and fauna. Materials will highlight key best practices for prairie restoration as defined in the management plan for the two sites.

D. Measurable Products and Outcomes

Habitat - Completion of this project at Wilson Springs (Site 1) provides an opportunity to restore the largest intact remnant (120 acres) of the original tall grass prairie of Prairie Township (now Fayetteville, Arkansas). It also provides an opportunity to provide habitat for several declining species associated with this habitat type: BIRDS - Henslow's Sparrow, Bell's Vireo, Willow Flycatcher, Sedge Wren, Grasshopper Sparrow, Painted Bunting; and FISH - Arkansas Darter. The restoration of Beaver Prairie (Site 2) will provide 36 restored acres of native tallgrass prairie at an additional site. Total restored habitat will be 156 acres. Both sites will serve as demonstrations for even more wet prairie restoration in the region under guidance of the Steering Committee.

Species - macroinvertebrate, fish, and bird population monitoring data will be available to compare species' response to restoration efforts.

Water Quality and Groundwater Recharge - Surface water quality at both sites is heavily influenced by commercial and industrial land use. Both sites have channelized streams with little riparian corridor to help stabilize stream banks. Restoration activities will armor the bank and reduce sediment contributions to creeks. Groundwater infiltration should occur at higher rates once the prairie restorations are complete.

Increased infiltration will store water in the vadose zone and will help maintain base flows during periods of little to no precipitation.

Data from all these areas will be used to update the Wildlife Action Plan where applicable.

Deliverables Calendar
August 1, 2009 – July 31, 2011

1st Quarter August-October 2009
Project monitoring methodology entered into the Natural Resources Monitoring Partnership website
Habitat assessment results
Initial plant, bird, fish, macroinvertebrate, and water monitoring
Volunteer Steering Committee meeting to begin planning
Long-term management plans developed

2nd Quarter November 2009-January 2010
Completion of site preparation – mowing, burning, herbiciding, etc.
Mechanical removal of exotic woody vegetation
Completion of earthwork
Seeding native prairie vegetation
Plant, bird, fish, and water monitoring
Volunteer Steering Committee meeting to assess and adjust management plans
Audubon and BWD will send out press releases for every volunteer event

3rd Quarter February-April 2010
Volunteer Steering Committee meeting to assess and adjust management plans
Plant, bird, fish, and water monitoring
Spreadsheet with data on outreach efforts to date

4th Quarter May-July 2010
Herbicide treatment for exotic vegetation control
Plant, bird, fish, macroinvertebrate, and water monitoring
Volunteer Steering Committee meeting to assess and adjust management plans
Spreadsheet with data on outreach efforts to date

5th Quarter August-October 2010
Prescribed burns (pending available funding)
Plant, bird, fish, macroinvertebrate, and water monitoring
Volunteer Steering Committee meeting to assess and adjust management plans
Spreadsheet with data on outreach efforts to date

6th Quarter November 2010-January 2011
Mechanical removal of exotic woody vegetation
Second seeding of native prairie vegetation
Plant, bird, fish, macroinvertebrate, and water monitoring
Volunteer Steering Committee meeting to assess and adjust management plans
Spreadsheet with data on outreach efforts to date

7th Quarter February-April 2011
Plant, bird, fish, and water monitoring
Volunteer Steering Committee meeting to assess and adjust management plans
Spreadsheet with data on outreach efforts to date

8th Quarter May-July 2011
Herbicide treatment for exotic vegetation control
Possible spring burn
Analysis and summary of plant, bird, fish, macroinvertebrate, and water monitoring
Talk or poster presentation of results to scientific
Volunteer Steering Committee meeting to discuss regional prairie restoration plan
Spreadsheet with data on outreach efforts to date
Relevant data added to the Wildlife Action Plan

E. Use of Existing Resources

Audubon's mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife and their habitats for the benefit of humanity and the earth's biological diversity. With a future nature center being developed in Northwest Arkansas, Audubon considers the rapidly urbanizing Beaver Lake Watershed, and its habitats, as a conservation priority. Toward this end, protecting watersheds and preserving native habitats is the smartest, cheapest, and most effective way of ensuring affordable, clean, drinking water from source water, the primary mission of Beaver Water District. Four years ago, Beaver Water District and Audubon Arkansas recognized this problem and took proactive steps to raise awareness in Northwest Arkansas and began conservation projects in the area. Our goal is to engage citizens of Northwest Arkansas in the process of protecting key habitats and water quality in the area. This project will expand our partnership and become a key component of the on-going conservation efforts of project partners. (http://www.ar.audubon.org/Centers_NorthwestAR.html)

Beaver Water District employs one part-time and two full-time environmental technicians, as well as two full-time laboratory technicians under the direction of a laboratory supervisor and manager of environmental quality. The staff are fully capable of monitoring surface water quality and groundwater content. Their environmental department and laboratory is accredited by both the Arkansas Department of Environmental Quality and the Arkansas Department of Health. BWD typically monitors streams and Beaver Lake for many water quality parameters. Soil sampling is also done on a less frequent basis by BWD employees.

For the last three years Audubon Arkansas and Beaver Water District have been conducting education, restoration, and outreach activities in the Upper White River Watershed. Project Accomplishments to date include:

Partnership Building

After an extensive review of the needs and current status of the Upper White River in 2003 Audubon began addressing partnership-building needs in the West Fork of the Upper White River Watershed. In the first year, Audubon developed an education and partnership-building initiative in the West Fork watershed by coordinating a West Fork Watershed team consisting of private citizens and nonprofit organizations, such as the Nature Conservancy, City Council Quorum Court, Ozark Society, Northwest Arkansas Audubon Society, Arkansas Canoe Club, and the Arkansas Fly Fishermen's Association. This team worked with local and state agencies such as the Arkansas Department of Environmental Quality, the Arkansas Soil and Water Conservation Commission, the City of Fayetteville, Washington County, and others to consider and develop specific watershed conservation measures on how to improve water

quality on the West Fork of the White River. Audubon has worked closely with ADEQ to utilize their data and expertise to maximize the efforts and project success. Audubon learned from experience that partnership is the bedrock on which successful community-based projects are built.

Public Awareness

A great deal of the project efforts have addressed educating the public on watershed awareness. The specific tactics of outreach campaigns were derived with the assistance of local community members and the watershed team. Audubon targeted city councils, elected officials, the business community including developers, the Arkansas Highway Commission, County Judge, city & county maintenance crews, engineering firms and builders, area schools, and citizen groups. Audubon consulted and coordinated closely with the Cooperative Extension Service and the University of Arkansas to build on their education efforts to-date.

Best Management Practices

Audubon has advocated and encouraged the practical use of best management practices (stream buffers, parking lot retention, protection and establishment of trees) determined to be the most effective in controlling sediment loading. These practices have been displayed at demonstration projects that Audubon developed at partner sites, through technical expertise assistance, staff presentations, and through important venues that the watershed team identifies. Audubon continues to rely upon work currently underway by ADEQ, and Beaver Water District, including geomorphologic studies, identification of watershed problems, and landowner identification to target program and outreach activities.

Successes

Audubon and Beaver Water District's success working in the Upper White has been publicly recognized and appreciated. At the heart of all of this work is the opportunity to test watershed philosophy assumptions and truly understand what it takes, in Arkansas, to strengthen public and municipal stewardship of natural resources. Audubon's ultimate goal through this work is to understand what tools citizens and municipal leaders need to effectively protect their quality of life and environmental resources.

Ongoing Volunteer efforts at Project Sites

Audubon has been hosting volunteer cleanup activities (invasive species marking, invasive species removal) at the Wilson Springs property since the fall of 2008. Audubon has a management agreement on Wilson Springs and has been supporting outreach on-site. This SWG proposal will fund the development of a conservation plan for this site and the Beaver Prairie site with guidance from a volunteer Steering Committee consisting of local experts in prairie ecosystems; this Steering Committee has already been formed. Audubon's intention is to also use volunteers and local conservation groups (under the management of Audubon and BWD staff and prairie restoration contractors) to implement the recommendations in the conservation plans (as appropriate). This is consistent with the variety of partnership activities that Beaver Water District and Audubon have carried out in the basin, as described above. BWD and Audubon Arkansas will send out press releases for every volunteer activity.

Additional Existing Resources

AGFC provides stream bank assessment and restoration planning for free through the Arkansas Stream Team program. We have a currently informal agreement with Dave Evans to wok on Wilson Springs and

Clabber Creek. We can then use the plans to leverage additional funding for the project. Arkansas Forestry Association's Urban Foresters can develop a forest management plan for the forested sections of our study sites. Audubon has a working relationship with the University of Arkansas's Center for Advanced Spatial Technologies (CAST) and with the Environmental and Spatial Technology (EAST) initiative that spans many projects. We will ask EAST for assistance mapping natural resources, and ask CAST to create visual representations of our plans that will be useful for relating concepts to the public.

Staff Qualifications

Daniel Scheiman, Ph.D., Director of Bird Conservation, is the lead manager responsible for this project's success. He will also provide technical expertise on bird habitat requirements and will assist with planning, restoration, monitoring, and outreach. Dr. Scheiman manages Arkansas' Important Bird Areas program and Waterbirds on Working Lands Initiative. He received his B.S. from Cornell University, M.S. from Eastern Illinois University, and Ph.D. from Purdue University, all in wildlife ecology. He has over ten years of bird research experience and several peer-reviewed publications.

Kevin Pierson, Regional Director of Conservation, Mississippi River Initiative, will be the manager responsible for oversight of day-to-day activities of project implementation, including monitoring to ensure benchmarks are achieved within time frames specified. As former Director of Conservation for Audubon Arkansas, Mr. Pierson supervised numerous activities related to wetland restoration, habitat improvement, and water quality science. Under the Mississippi River Initiative he now oversees National Audubon's conservation priorities in the Mississippi River Basin. Prior to working for Audubon, Mr. Pierson was an associate at an environmental consulting firm and worked for the Arkansas Department of Environmental Quality. He graduated from the University of Arkansas with a M.S. in Ecology.

Michelle Viney, Conservation Program Manager, will coordinate with project partners, manage volunteers, and assist with planning, restoration, monitoring, and outreach. Michelle runs Audubon Arkansas's Northwest Arkansas office where she manages multiple watershed monitoring and educational projects, especially in partnership with Beaver Water District. She has a B.A. from Hendrix College in Environmental Ethics, and has been involved in environmental education and conservation for 10 years with experience developing and delivering curriculum related to a wide variety of environmental topics. She is actively involved in the Arkansas Environmental Education Association and also serves as a Project WET, WILD, and Learning Tree facilitator.

Robert Morgan, Ph.D., Beaver Water District Manager of Environmental Quality, will provide technical expertise on monitoring and analysis of parameters related to ground and surface water quality. Dr. Morgan is a registered professional engineer in Arkansas with expertise in ecological processes as applied to stream restoration, water quality management, water supply, and wastewater treatment. He has a Ph.D. in Engineering from the University of Arkansas College of Engineering, a MS in Civil Engineering, and BS in Civil Engineering and Education from the University of Arkansas. Research interests include watershed management with emphasis on stakeholder involvement and stream restoration. Dr. Morgan currently serves as Adjunct Faculty in the Biological and Agricultural Engineering Department at the University of Arkansas.

Bradley Hufhines, Beaver Water District Environmental Technician, will conduct all of the water quality and soil water content monitoring. As an environmental technician at Beaver Water District, Mr. Hufhines conducts water quality monitoring regularly. He received his B.S in Animal Science and is currently finishing his M.S. in Crop, Soil, and Environmental Science at the University of Arkansas. He has over eight years of water and wastewater experience as well as numerous school projects related to water quality.