

# The Arkansas Annual Report

Prepared Pursuant to Section 319 (h) of the Federal Clean Water Act

Arkansas Natural Resources Commission



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## 1 SUMMARIES

### Notes from the Director:

The Arkansas Natural Resources Commission (ANRC) is proud to provide this 2013 Annual Report for the Arkansas Nonpoint Source (NPS) Pollution Management Program. The 2013 year proved to be one of substantial accomplishment. Years of previous work began to be evident by the increase of capacity by the conservation districts with their development of resource assessments (RA) for the watersheds within their county's borders, the number of self or state funded non-governmental organizations (NGOs) projects, and partnerships being enhanced or developed.



For a number of years, county conservation districts have had limited resources, knowledge, or initiative to build capacity. In 2013, ANRC's NPS Management program, the Conservation Section, and the Arkansas Association of Conservation Districts partnered to initiate a targeted project to have conservation districts assess the natural resource needs of their county. These resource assessments (RAs) have provided valuable insight to specific problematic areas or conservation resource deficiencies. Through the initial development of RAs and their continued enhancement and refining, they will become the "baseline" for: watershed management plans (WMPs), defining areas for concentrating BMP efforts, and most importantly the voice of the local stakeholders.

Capacity has also increased by NGOs. First, the Illinois River Watershed Partnership (IRWP) has cooperatively purchased a lake and surrounding land with the Arkansas Game and Fish Commission to develop a watershed sanctuary. The adjoining cave owned by the Arkansas Natural Heritage Commission, which is home to the endangered Arkansas Cavefish, is also a partner. The NPS Management program assisted IRWP in the development of a 9 element EPA accepted WMP. IRWP in cooperation with ANRC will develop the sanctuary to partially serve as a low impact development and green infrastructure BMP demonstration area.

Second, ANRC assisted the Beaver Watershed Alliance (BWA) in the development of their 9 element EPA watershed management plan. With EPA acceptance of the plan, the BWA moved forward and hired a full time coordinator. The coordinator helped "give a face" to BWA and awareness of water quality issues. With the assistance of the coordinator, stakeholders started to take ownership and action. Currently BWA and its stakeholders are funding stream assessments within the watershed and held their first annual BWA watershed symposium.

This past year we did not enhance water quality to a level where a stream or segment was removed from the state's 303(d) list, but we believe the accomplishments that were made are no less important. The NPS Management Program is a partnership between federal, state, and local entities. This program would not function properly without the cooperation and support of all three. We are all learning to better allocate our resources and strive to do more with less, therefore these partnerships are more important than ever and the cornerstone of sustainability. Your dedication to and ongoing participation in the NPS program is deeply appreciated.

Sincerely, J. Randy Young

A handwritten signature in black ink, appearing to read "J. Randy Young".

## **Executive Summary:**

The Arkansas Natural Resources Commission (ANRC) is the lead agency responsible for the Arkansas NPS Management Program. ANRC, its state partners and stakeholders, collectively known as the “work group”, collaboratively work together to develop the NPS Pollution Management Plan (Plan). The Plan provides a broad framework and aspirational objectives and milestones for implementation of the NPS Pollution Management program. The Plan also utilizes a risk matrix assessment tool to prioritize watersheds for resource allocation. The Plan is comprehensively updated every five years based upon an adaptive approach. Annual update meetings are held to review and discuss new, additional, or updated information and if appropriate to be included into the Plan.

The Arkansas Department of Environmental Quality (ADEQ) is the primacy agency for overseeing water quality in Arkansas. ADEQ is required to develop and provide an Integrated Water Quality Assessment Report and listing, commonly referred to as the 305(b) report and the 303(d) list, every two years for EPA acceptance and approval. At the writing of this report, the 2012 305(b) report has not been approved by EPA. The assessment and report defines if waterbodies (streams, lakes, and impoundments) are meeting and supporting their designated uses. The 305(b) report and subsequent 303(d) list provide the initial and foremost basis to direct efforts to restore water quality within the State.

The 2013 Annual Report reflects projects, efforts, and activities initiated and implemented by various partners and stakeholders within the past year that address nonpoint source pollution, concerns and assist the NPS program in meeting the milestones set forth in the Plan. The Annual Report highlights project efforts and accomplishments, calculated load reductions of sediment and nutrients, a depiction of federal dollars allocated categorically, and the status of meeting the current milestones.

Many federal and state agencies, non-governmental organizations (NGOs), and individuals have invested multiple resources to improve water quality in Arkansas. In some areas and watersheds, water quality data and trends are showing improvement. Water quality will only continue to be improved as:

- Watershed stakeholders become more actively involved in restoration efforts. We are starting to see conservation districts and other NGOs build capacity and initiate projects and efforts to address water quality and areas of resource concerns
- Education materials specific to individual watersheds are developed and delivered. The Illinois River Watershed Partnership and the Beaver Watershed Alliance has and continues to develop education materials, hold events, workshops and provide opportunities for stakeholders to become more actively involved and more knowledgeable about watershed issues
- Conservation plans are developed, utilized, and implemented by landowners. Comprehensive Nutrient Management Plans (CNMP) are being written and followed by landowners. The CNMP have not only prescribed nutrient use but has become a valuable economic tool for landowners providing proper time and nutrient application to forage crops
- Assessments, tools, evaluation efforts, and milestones are utilized and continue to be evaluated

The primary and pinnacle evaluation of the NPS Program and Plan lies within the 303(d) list. As impaired waterbodies are restored, they are removed from the list. The level of effort needed to remove a waterbody is enormous and cannot be accomplished by a single agency, program, project, or activity. It is essential ANRC, its partners, and stakeholders work together in a collaborative effort to improve water quality.

## **2 PROGRAM CONSTRAINTS AND REDUCED FUNDING:**

The Arkansas NPS program received a reduction in funding for FY13. The program has received reductions in funding since 2006. In FY13, Arkansas received over a five percent reduction from what was received in FY12. This reduction resulted in ANRC not being able to fund all approved applications that were submitted. One project went unfunded and another project's budget was reduced by \$13,620. ANRC was able to utilize FY09 unliquidated obligations to fund another application that otherwise would have went unfunded.

In addition to the funding reduction, ANRC did not receive its allocation in a timely manner, which in turn delayed projects from starting on time. Typically, projects start each year on July 1. The FY13 allocation was not received until late August. Consequently, project start and project deliverable dates had to be modified.

Additionally, the EPA Region 6 technical liaison that had been assigned and worked with Arkansas for several years changed positions, and a new liaison was assigned. Understandably, any transition of personnel has its difficulties, but this transition was almost seamless. Our new technical liaison has been very knowledgeable, patient cooperative, and helpful.

In FY10, ANRC elected to use its EPA funding to fund the administration of the program for multiple years. This administrative structure has allowed the program to focus more dollars on larger scale projects in priority areas through FY11-13. Since federal allocations have continually decreased, ANRC plans to once again apply for multi-year administrative funding in FY14.



## 3 PROGRAM PROJECT HIGHLIGHTS:

The Arkansas Nonpoint Source Pollution (NPS) Management Program continued to expand its partners and capacity to manage nonpoint source pollution during 2013. EPA's funding directives were focused on best management practice (BMP) implementation in NPS priority watersheds, as defined by Arkansas' 2011-2016 NPS Management Plan. Additionally, those watersheds having a total maximum daily load (TMDL), listed on the state's 303(d) list, and identified as a priority watershed in the states NPS management plan were the highest priorities for funding. Project activities continued in the areas of BMP implementation, stream bank stabilization, modeling, and the development of new tools. A few of the program highlights are described below.

### **Upper White River Watershed/Streambank Protection and Stabilization Project**

This cooperative endeavor between the Arkansas Natural Resources Commission and the Arkansas Game and Fish Commission was designed to meet key elements in the state's nonpoint source pollution management program. The goal of the project was to restore unstable sections of streams and rivers in the upper White River (HUC# 11010001) watershed to reduce sediment loads from banks, improve water quality, and enhance aquatic and terrestrial habitat. The project objectives were:

- 1) Identify impaired streambanks in the upper White River watershed.
- 2) Prioritize streambanks by predicting annual streambank erosion rates (tons/yr) using BEHI and NBS ratings (BANCS Model).
- 3) Develop a site specific restoration plan for two sites (Kings River and Bull Shoals Tailwater) which addresses stream instability, landowner and local objectives, maximizes sediment reduction, and maximizes habitat restoration.
- 4) Reduce sediment loadings to streams/rivers from accelerated streambank erosion.
- 5) Restore riparian areas and protect existing riparian areas along with enhancement of terrestrial habitat and increase aquatic habitat in the stream watershed.
- 6) Increase awareness and promote the use of natural channel design among landowners and the public.

The two sites were selected and construction was slated to begin on October 1, 2011 and scheduled to go through November 30, 2012. The Sheid's site on the White River was started July 11, 2012, and was completed on August 9, 2012. The Blossom's site on the Kings River was delayed by multiple complications. First, federal guidelines required a freshwater mussel survey to be completed for any construction site on the Kings River in order for the Sec.404 permit to be approved. Second, the Trout Habitat Program's truck was involved in an accident that left the program without a truck to haul materials and equipment to the project site for 4 months. A project extension was approved for an additional 4 months (Jan 2013 - Apr 2013) in order to complete the project. On February 5, 2013, construction on the Blossom's site was started. Construction was completed on April 25, 2013.

## **Sheid's Site on the White River in Baxter County**

This restoration effort consisted of protecting over 1,000' of riverbank that lost approximately 6,300 tons of sediment in the March 2008 and April 2011 floods. Work on this project began on July 11, 2012. Four 100' long vanes were constructed along the project site. These vanes were spaced at approximately 210' apart, and they each protect 100' upstream and 200' downstream of the vane. The vanes function by moving the velocity of the stream away from the toe of the shoreline, therefore reducing the amount of shear stress, and preventing further erosion to the shoreline. Approximately 1,375 tons of boulders were hauled to the site from a nearby abandoned quarry to be used to construct the four vanes. This project resulted in an annual load reduction of approximately 4,481 tons of sediment/year. After construction, riparian species of trees and native grasses were planted in order to provide vegetative growth along the impacted area.



**Sheid's Site: White River in Baxter County before Restoration**



**Sheid's Site: White River in Baxter County before Restoration**



**Sheid's Site: White River in Baxter County after Restoration**



## **Blossom Site on Kings River in Carroll County**

This restoration effort consisted of restoring approximately 1,120 feet of river reach resulting in an annual load reduction of 2,388 tons of sediment/year. Approximately 2,100 tons of large boulders were hauled to the site and work began in early February of 2013. Six 100' long vanes were constructed along the length of the project area, where they were spaced approximately 200' apart. Each vane protects 100' upstream and 200' downstream of the structure. The vanes function by moving the velocity of the stream away from the toe of the shoreline, therefore reducing the amount of shear stress, and preventing further erosion to the shoreline. Above the second to last vane and between the last two vanes, logs and root wads were used to construct toe-wood structures, to further protect the shoreline from erosion, and to add critical habitat for aquatic and terrestrial species of the riverine environment. Approximately 7,363 cubic yards of gravel was taken from the point-bar in the middle of the project area, and moved to specific locations within the project area, to be used to form bank-full benches between the upper three vanes, and to backfill behind the toe-wood structure. After all of the structures were completed and all the banks were re-sloped, the entire area was re-vegetated with native trees and shrubs to promote a healthy riparian area. Over 200 trees and shrubs were planted down the entire reach of the stream bank restoration area, and approximately 180' of sod mats were placed along the toe of the floodplain bench atop the toe-wood. The sod mats were used to jumpstart the root structure and vegetation density along the riparian area. Approximately 40 trees and shrubs were transplanted that were previously established in the vicinity. After the trees were planted, the entire project area was seeded with annual rye grass and native grass seed. The rye grass grows quickly and establishes good ground cover in a few weeks, and the native grasses grow slowly, but will remain in the area long after the rye grass is gone.



**Blossom Site: Kings River before Restoration**



**Blossom Site: Kings River after Restoration**

The completion of these two sites reduced sediment input from these locations and will assist to improve water quality downstream of the sites. These two sites will also be used as demonstration sites to educate and encourage other landowners to implement good riparian management principles on their land.

## **Strawberry River Improvement Project**

The Strawberry River watershed became a new priority in the 2011-2016 State NPS Management Plan. According to the Arkansas Department of Environmental Quality's 2010 303(d) list of impaired water bodies, the Strawberry River is classified as a Category 4a and 5 stream citing pathogens and siltation as the cause. Therefore, the State's NPS Management Program has tried to focus dollars and effort in this watershed that spans across several counties for the last several years. One of the first projects (FY 08-500) funded was in the upper reaches of the watershed in Fulton County. That project was highly successful in engaging landowners and building new relationships. It also laid some groundwork for other conservation districts to follow on how to successfully implement projects of their own. The success, lessons learned, and sustainability of the first project has led to participation and projects from other counties, such as Izard (FY11-1100) and Sharp (FY11-1000), within the watershed.

Sharp County landowners in the watershed were looking for ways to help alleviate some of the sediment runoff from their pastures. They looked at the success their counter parts were having upriver and wanted to do something similar, so they turned to their local county conservation district (District) for help. The District contacted the Arkansas Natural Resources Commission (ANRC) in 2010 about the possibility of financial assistance for the installation and demonstration of best management practices (BMPs). They also contacted Fulton County staff to gain more knowledge about what had worked well and lessons that were learned. In the fall of 2010, the Sharp County Conservation District applied for a 319(h) grant. A work plan was submitted to ANRC and subsequently funded in July of 2011.

The main purpose of the project was to supply technical and financial assistance to landowners in the watershed for the installation of demonstration BMPs. Also, technology transfer has taken place through landowner meetings and newsletters that have been distributed to nearly 300 landowners on a quarterly basis. The District also purchased a no-till drill through the project to help facilitate better pasture management in the watershed.

The Izard County Conservation District project started July 1, 2011 and is slated to end in June of 2014. The District was able to allocate and spend all available dollars in the first year of the project, and BMP implementation has already been completed on all approved contracts. The only outstanding deliverable is the final report. The initial project was so successful that the demands for BMPs were greater than the initial project budget. The District contacted ANRC and ARNC was able to use unliquidated obligations and award more dollars for BMP implementation.

Both of these projects are unique and successful in a couple of ways. First the Districts landowner's enthusiasm and willingness to promote the projects and implement BMPs are unique. This was evident by how fast the Districts developed BMP contracts, the speed they were implemented, and the demand for limited dollars. Even though ANRC was able to add dollars to these projects the demand is still greater than dollars available. Secondly, since these projects are piggybacking with like projects in neighboring counties that share the Strawberry River watershed, it is helping blanket the watershed with implementation efforts. Success was also shown through how good communication and technical transfer between Districts and conservation partners leads to better and more successful projects. These projects are also a good demonstration on how people are coming to realize that watersheds cross county boundaries. Here we have three different county conservation districts working to solve problems in a watershed.

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To date, the following BMPs have been implemented through this project:

<b>11-1000</b>	
Nutrient Management	3,866 Acres
Fencing	43,592 Feet
Brush Management	1,741 Acres
Pest Management	1,415 Acres
Prescribed Grazing	4,717 Acres
Heavy Use Area Protection	7 Acres

Estimated load reductions for this project to date:

**Sediment- 1,826 tons/yr. Nitrogen- 3,740 lbs. /yr. Phosphorous- 1,869 lbs. /yr.**



## **Conservation District Resource Assessments**

This project was designed to help each conservation district in the state develop a comprehensive resource assessment report to address natural resource concerns for future conservation planning and implementation. The resource assessments (RAs) include reports of each watershed within each district's boundaries. The development of these RAs hopefully will lead to future conservation planning, funding, and project development. The RA's contain useful information such as land use data, watershed information, flooding and drainage issues, water quality problems, water supply needs, and other information. These assessments can be used as the initial basis for the development of nine element watershed based plans and provide local information for the ongoing Arkansas Water Plan update. With the amount of information required for this assessment, it motivated most conservation district board members to be involved in its planning and development. Directors were asked to hold and facilitate public meetings with local and state officials to record their resource concerns. These RAs will be the foundation for the conservation district's future plan of work. In the future, the allocation of state funds to conservation districts will be based upon the resource needs as identified by the RAs. Additionally, the districts must demonstrate the capacity and willingness to address these resource needs. Any district in fiscal or capacity distress or does not actively address resource needs as identified in their RAs, could possibly be consolidated with a surrounding district(s) to enhance capacity to address resource needs.

The Conservation District Resource Assessment project consisted of several major tasks that were identified in the scope of work at the beginning of the project. The first task completed was to form a review committee that was made up of agency personnel with expertise in specific areas of the resource assessment.

The second task was to develop the format and tools that were to be used. ANRC created the resource assessment format based on the basic information in a nine element watershed plan, comments from the review committee, and advice from the executive director of the Arkansas Natural Resources Commission. An information sheet was also developed to assist the districts on how to put the assessment together by using sources of information for the assessment and the basics of what we were expecting. A checklist was then developed to help the districts evaluate the content of their assessment as the process went along.

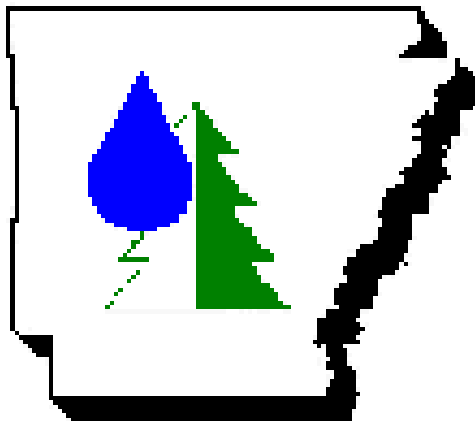
The third task was getting the district boards and employees informed and started on their resource assessment. A memo was mailed to all the conservation districts informing them about the project. Six pilot districts were selected to begin the assessment process; the thought was to begin with these districts so that if unforeseen problems arose, they could be solved before the whole state was engaged. The pilot districts did provide some guidance on finding some of the information for the assessment and the need for explanation on portions of the assessment format that were not clear. Once the pilot districts had gotten well into the process, the project was implemented statewide. The RA outline and information sheet was sent to the remaining 69 counties to begin collecting information. From the beginning of this project, it was known that to be successful, ANRC staff would need to help the district employees one on one with their assessments and also try to encourage conservation district board member participation as much as possible. The land resource specialists (LRS) from ANRC's Conservation Section met with each employee who was assigned to work on the assessment for their district. It was explained to them what needed to be in the assessment, how to set it up, where to find statistics and information, what officials they needed to visit within their district, and further explained the purpose for this project and the things that could come from it. A similar approach was taken with the conservation district board members by the LRS attending their local board meetings to explain to them the process and what was expected of them in this project. Throughout the project, the LRSs visited the districts to assist and keep track of progress. The review committee met a month prior to the project's completion to discuss minimum qualifications needed to meet criteria for the assessment. The committee reviewed and provided comments to the conservation districts

on the first draft of resource assessments. ANRC received the initial draft of RAs from 74 out of 75 districts. The districts were given time to make the changes to their assessment to make them acceptable to the Commission. When the final draft assessments were returned, they were reevaluated to ensure necessary changes and improvements had been made. The LRSs were available during the process to help answer questions and provide information to help the district get their assessment to meet the requirements of the review committee. At the conclusion of the project, ANRC received an assessment from all 75 counties in the state. The initial project goal was to receive draft RAs from 60 of the 75 districts. Therefore, the goal was exceeded.

As the districts completed their RAs, they began to realize their value. They began to realize their RA was not a static document. With the leadership of the Arkansas Association of Conservation Districts and ANRC, phase II of the project is being initiated. The districts are enhancing their initial RAs by incorporating more stakeholder involvement and detail related to the source and cause of the resource need. Some districts are beginning to develop strategies to address resource needs.

The benefits of this project have been numerous. The project has helped conservation districts assess their capacity, identify nontraditional stakeholders, assess stakeholder needs, and identify issues or problems that had been largely unnoticed in the past. Districts can now go forward, equipped with more information and knowledge to plan, develop strategies, and implement efforts that will lead to solutions to their resource concerns.

## Arkansas Association of Conservation Districts



## 4 MONITORING AND ASSESSMENT PROJECTS

During 2013 a variety of monitoring projects gathered data to determine the effectiveness of BMP implementation and restoration projects. The data was also collected to determine thresholds for sediment and nutrient levels around the State. The Arkansas Natural Resources Commission’s monitoring supplements ongoing ADEQ monitoring that is taking place in streams around the state. The Arkansas NPS Program uses ADEQ’s monitoring data and their report of waters for the state to identify priority watersheds around the Natural State. There are many other partners as well that maintain monitoring stations in selected water bodies across the state, including: the U.S. Geological Survey, U.S. Army Corps of Engineers, some water districts, and other entities.



Below is a list of monitoring projects in the nonpoint source program for FY13:

### 2013 NPS Monitoring Projects

Monitoring Projects	Project #
Relations between Biological Communities and Nutrient Concentrations, Land Use, and other Environmental Factors for Streams in Illinois River Basin in Northwest Arkansas	09-1800
Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin	11-500
Water Quality Monitoring for the Lake Conway Point Remove Watershed	11-600
Water Quality Monitoring for Selected Priority Watersheds in Arkansas: Upper Saline, Poteau, and Strawberry	11-800
Cache River Monitoring Project	11-1600
Water Quality Monitoring for the L’Anguille Watershed	11-1700
Water Quality Monitoring for Larkin Creek Lateral 1-A, St. Francis County-Phase II	11-1800
Little River Ditches Watershed Monitoring	11-2000 S
Water Quality Monitoring for the L’Anguille Watershed	12-800
Water Quality Monitoring for the Bayou Bartholomew Watershed- Deep Bayou	13-400

## **5 UPDATE OF NPS RISK MATRIX TOOL:**

The ANRC's nonpoint source (NPS) program has worked with partners during FY13 to update the risk assessment matrix tool. This tool is used to determine how particular watersheds are prioritized, based on the risk of becoming impaired due to various and diverse causes of nonpoint source runoff. Staff of the Biological and Agricultural Engineering Department at the University of Arkansas developed this multi-category based watershed prioritization process. It was developed cooperatively with multiple stakeholders and interested citizens of the State. Initially, there were eleven categories which were used to assess the watersheds' risk for nonpoint source pollution which, over a period of years, has been changed through a discussion process called Collaborative Risk Assessment (CRA). The current prioritization process deals with data in twelve broad categories. These categories are as follows: Water Body Impairment, Human Health Impacts, Population, Land Use, Land Use Change, Biotic Impacts, Potential Human Exposure, Concentration of Livestock, Cropland, Construction, Density of Unpaved Roads, and Priority of a Bordering State.

Each of the 58 watersheds (8 digit HUC's) in Arkansas receives a score under each of the main categories. The overall goal however, is to use these categories/sub-categories to quantify the overall risk that the watershed has for non-point source pollution. Under each of the main categories, there are sub-categories. The scores for the first four main categories are obtained from a water quality report compiled by the Arkansas Department of Environmental Quality (ADEQ), called the 303(d) list. Basically, this report uses water quality monitoring data to identify the impaired streams within the State. The data for categories 6, 8, 10, and 11 was obtained from the latest remote sensing data, while the data for the rest of the categories/sub-categories come from reports compiled by local or state agencies. Each category/sub-category was assigned weights which were finalized during the CRA process. The final score for a watershed is determined by multiplying category 1 by the sum of the scores for rest of the categories. Based on the final scores obtained, a percentile rating of watersheds is prepared, which enables ANRC to designate priority watersheds.

In FY13, ANRC worked in collaboration with the University of Arkansas to begin incorporating another sub-category into the risk assessment matrix tool. The inclusion of threatened and endangered species added another facet to this evolving risk assessment tool. Most threatened and endangered aquatic species in Arkansas are considered useful as an indicator of water quality. Some species cannot withstand a specific high threshold of turbidity, while others cannot survive once the dissolved oxygen has reached a low threshold within a certain water body. By monitoring these species for data such as species composition, abundance, mortality rates, and population trends and then evaluating the data collected, we can compare this data to water quality data to better identify trends that will indicate the risk of a stream that is at a greater risk of becoming impaired. In addition, these species are of concern due to declining numbers and loss of habitat. By incorporating this sub-category into the risk matrix tool, we can more precisely identify the watersheds that are of the highest priority. If these water bodies begin to exhibit a higher degree of water quality, endangered and threatened species should also respond in a similarly positive manner.

ANRC and the University of Arkansas Biological and Agricultural Engineering Department have worked diligently together to incorporate as many categories as possible to take a holistic approach towards the risk assessment tool. By including threatened and endangered species into the risk matrix, each watershed will receive a more precise value for determining the risk and subsequent impact of nonpoint source pollution.



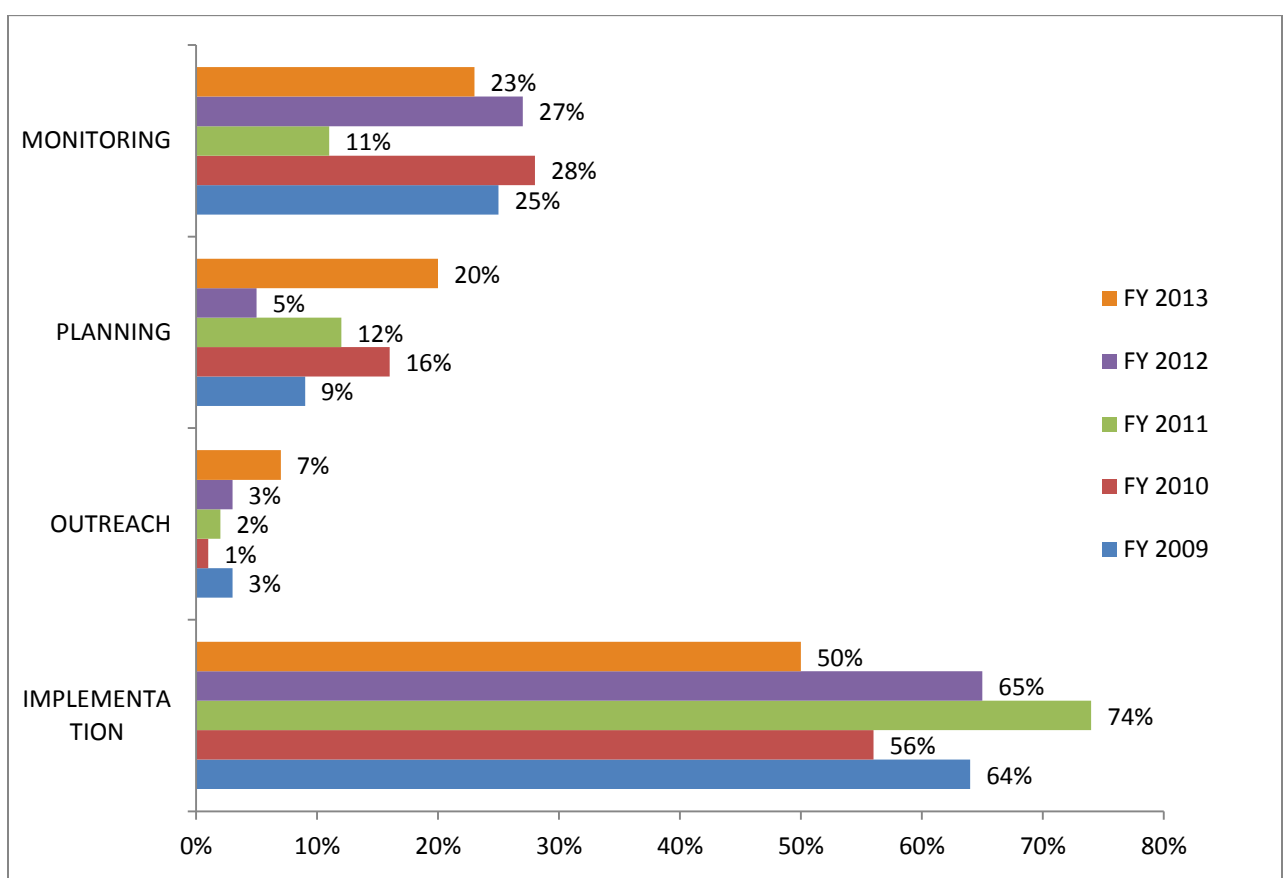
## 6 FEDERAL RESOURCE ALLOCATION:

### Program Expenditures:

Typically the Arkansas Nonpoint Source Program allocates the majority of its Clean Water Act 319(h) funds to its partners who implement projects in priority watersheds that best meet the goals and milestones of the Program. These partners must be capable of carrying out projects and are typically required to provide a minimum of 43% match in non-federal funds. In FY13, ANRC and its project partners spent approximately \$3M in federal funds to address water quality resource concerns and to reduce or prevent nonpoint source pollution.

The chart below shows how federal funds disbursed for projects were allocated among monitoring, planning, outreach, and implementation projects. Monitoring expenditures decreased 4% of federal expenditures from FY12 to FY13. Planning expenditures increased considerably to 20% while outreach expenditures increased 4% respectively. Implementation expenditures decreased 15% in FY13. This decrease directly correlates with the drought and subsequent economic conditions.

### Program Expenditures for FY13:



## 7 PRACTICES IMPLEMENTED AND LOAD REDUCTION

### Best Management Practices:

Over the past year, ANRC has helped fund BMP projects to reduce NPS pollution. These projects report how many BMPs were installed. The BMP type and protected land area were entered in the Region 5, STEPL, or RUSLE load estimation models. Depending on the model used and the subsequent data needed to run the model, estimated load reductions could vary. The models typically estimate annual pounds per year of nitrogen and phosphorus reduced as well as the annual tons per year of sediment saved. Presently, all BMP and Load Reduction data has been entered into the GRTS database as well.

### Total Best Management Practices Implemented from 10/01/2012 through 09/30/2013

FY 13 BMP Totals	
Access Control	2
Brush Management	3570 Acres
Cover Crop	272 Acres
Fencing	166,011 Feet
Forage and Biomass Planting	1,412 Acres
Heavy Use Area	9
Irrigation Water Conveyance	20,145 Feet
Nutrient Management	5715 Acres
Pest Management	8917 Acres
Pipeline	19,613 Feet
Pond	4
Prescribed Grazing	8,453 Acres
Structure for Water Control	943 Feet
Water Well	1
Watering Facility	26

### Best Management Practices (BMP Implementation by Project):

Project Number	
09-2100	
4 Wire Fence	49,145 Feet
Brush Management	438 Acres
Conventional Planting	25 Acres
Heavy Use Area	1
Nutrient Management	2,001 Acres

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Pest Management	1,128 Acres
Pipeline	190 Feet
Pond	1,500 Yard <sup>3</sup>
Prescribed Grazing	2,129 Acres
Watering Facility	1

<b>09-2300</b>	
Barbed Wire Fence	25,620 Feet
Brush Management	275 Acres
Forage & Biomass planting	269 Acres
Pipeline	3,750 Feet
Watering Facility	7

<b>09-2500</b>	
Barbed Wire Fence	14,690 Feet
Brush Management	560 Acres
Forage-Biomass Planting	30 Acres
Pipeline	2,650 Feet
Water Facility	3

<b>11-1000</b>	
Nutrient Management	1,988 Acres
Barbed Wire Fence	10,435 Feet
Brush Management	611 Acres
Pest Management	902 Acres
Prescribed Grazing	1,902 Acres

<b>11-1100</b>	
Access Control	2
Brush Management	1,241 Acres
Fence	19,841 Feet
Forage and Biomass Planting	384 Acres
Heavy Use Area	6
Herbaceous Weed Control	36 Acres
Integrated Pest Management	2,568 Acres
Nutrient Management	1,726 Acres
Pipeline	7,430 Feet
Pond	2
Prescribed Grazing	1,962 Acres
Water Well	1

Watering Facility	13
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<b>11-1200</b>	
Brush Management	242 Acres
Fence	42,470 Feet
Heavy Use Area	1
Pasture Planting	109 Acres
Pest Management	4,319 Acres
Pipeline	593 Feet
Prescribed Grazing	2,459 Acres
Watering Facility	2

<b>11-1300</b>	
Brush management	165 Acres
Fence (Barb wire)	2,630 Feet
Forage and Biomass planting	400 Acres

<b>11-1400</b>	
Fencing	1,180 Feet

<b>12-200</b>	
Forage and Biomass Planting	195 Acres
Pipe	5,000 Feet
Pond	3,187 Yard <sup>3</sup>
Heavy Use Area	1

<b>12-300</b>	
Irrigation Pipeline	2,834 Feet

<b>12-400</b>	
Irrigation Water Conveyance	17,311 Feet
Cover Crop	272 Acres
Structure for Water Control	943 Feet

**Load Reductions:**

**Load Reductions for FY13**

Project #	Nitrogen Reduced (lbs./year)		Phosphorus Reduced (lbs./year)		Sediment Reduced (tons/year)	
	FY 13	Project Life	FY 13	Project Life	FY 13	Project Life
04-183	960	2,799	480	1,463	622	2,052
08-800	-	-	-	-	-	11,000
08-1300	-	-	-	-	-	40,165
09-700	0	310	0	156	0	167
09-1500	-	-	-	-	-	84,000
09-2100	1,775	1,775	888	888	860	860
09-2200	527	527	262	262	337	337
09-2300	539	539	267	267	348	348
09-2500	552	552	276	276	352	352
10-600	119	237	60	118	65	127
11-700	-	1,205	-	602	-	6,023
11-1000	1,744	3,740	871	1,869	852	1,825
11-1100	6,512	8,981	3,250	4,488	4,030	5,587
11-1200	2,987	5,422	1,493	2,709	1,561	2,905
11-1300	149	1,944	75	971	95	1,195
11-1400	130	1,021	65	510	84	658
11-1500	-	-	-	-	-	6,869
11-2100	80	80	40	40	43	43
12-200	113	243	56	121	78	167
12-400	60	60	57	57	115	115
<b>Total</b>	<b>16,247</b>	<b>29,435</b>	<b>8,140</b>	<b>14,797</b>	<b>9,442</b>	<b>164,795</b>

## 8 UPDATED PROJECTS:

### Active 319 Projects:

In Arkansas, a tool has been developed to help prioritize watersheds that are in need of consideration to help reduce NPS pollution. Through the SWAT modeling tool, the 2011-2016 NPS Management Update has prioritized ten main watersheds using a risk assessment matrix. These ten watersheds include Bayou Bartholomew, Beaver Reservoir/Upper White, Cache River, Illinois River, Lake Conway Point Remove, L'Anguille River, Lower Ouachita-Smackover, Poteau, Strawberry River, and Upper Saline River. Along with the priority watersheds that have been identified in the 2011-2016 management plan, water bodies having TMDLs from nonpoint source automatically become a priority within Arkansas' NPS Management Program also. Summarized below is a list of active projects found within priority, TMDLs, and non-priority watersheds. Some of these projects are found in multiple watersheds. Statewide projects are listed at the end of this section.

### Priority & TMDL Watershed Projects:

#### Bayou Bartholomew (NPS Priority & TMDL):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
13-400: NWQI Monitoring- Deep Bayou	July 1, 2013- September 30, 2017	Federal: \$518,196 Match: \$383,230	To collect, analyze, and report water quality data from the Bayou Bartholomew watershed.	A QAPP has been written and approved. Equipment has been installed and no samples have been collected to date.

#### Beaver Reservoir/Upper White (NPS Priority):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
08-1100: Enhancement of Riparian Buffer Inventorying Algorithm for Field Use	July 1, 2011- June 30, 2013	Federal: \$98,059 Match: \$42,025	Create a cartographic/spatial inventory of riparian cover by accounting for topography and land use. Develop a desktop based tool and evaluate it by the involvement of stakeholders through a Scientific Advisory Committee.	Project completed 6/30/2013. StreBanD tool was developed as is capable of delineating stream banks and measuring riparian vegetation. This tool can be beneficial to policy makers, researchers, landowners, and various others interested in assessing inventory of riparian areas.
09-1600:WFWR Streambank Restoration at Fayetteville Airport: Phase II	December 1, 2010- May 15, 2014 No cost extension to 5/2014	Federal: \$458,146 Match: \$345,619	To implement a river restoration design that is developed for the project 07-410: WFWR Stream Restoration at	2011 was laying the groundwork for implementing this river restoration project. Accomplishments include outreach efforts that were used

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			Fayetteville Airport: Phase I.	to educate the general public about stream and river restoration and the selection of a vendor to conduct geologic testing. Project is currently in the construction phase.
11-300: Rain Gardens for Beaver Lake: A Blooming Good Idea	July 1, 2011-June 30, 2014	Federal: \$139,702 Match: \$105,835	The project is to reduce nutrient and sediment load into the WFWR and Beaver Lake/White River to improve water quality, and enhance aquatic and terrestrial habitat.	This project has developed a list of potential rain garden demonstration cooperators. During the past 2 project year, 14 rain gardens were installed and along with project 11-400, 78 field days and 14 training sessions were conducted.
11-500: Water Quality Monitoring in the Upper Illinois River and Upper White Watersheds	July 1, 2011-September 30, 2015	Federal: \$728,000 Match: \$621,197	This project will collect and analyze 46 water samples at 19 sites annually in the Upper Illinois Watershed and Upper White River Basin to estimate annual constituent loads and trends. This project will also collect water samples and measure physio-chemical properties in stream reaches on the 303(d) list to address impairment by pathogens and dissolved oxygen.	A constituent load, dissolved oxygen, and pathogen monitoring QAPP was submitted and approved by EPA. Discharge measurement equipment was installed and 82 discharge samples taken. 98 samples have been collected from 19 sites in the Upper Illinois and Beaver Watersheds, along with 19 bacteria samples from 29 sites within the Upper Illinois.

## Bull Shoals (TMDL):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-1400: Crooked Creek Watershed Project	July 1, 2011- June 30, 2014	Federal: \$ 233,575 Match: \$177,500	To maintain or restore all designated uses of the Crooked Creek Watershed by implementing a program of voluntary participation of landowners and land users in the application of BMPs. Development of 150 conservation plans on 42,150 acres of pastureland and 6.5 miles of stream bank protection in the Crooked Creek Watersheds.	62 BMPs have been developed, the Conservation District has assisted those 62 farmers with layout and design of the BMPs, and around 41 applications have received payment with all cost-share payments having been spent
12-200: Boone County Bull Shoals Watershed Project	July 1, 2012- June 30, 2015	Federal: \$ 127,749 Match: \$98,420	Implement BMP's	No-till drill purchased and 8 farm plans written. Nineteen applications have been approved with ten of those receiving payment
09-2300: Crooked Creek Watershed	October 1, 2012-June 30, 2014	Federal:\$75,000 Match:\$112,500	To supplement project 11-1400 with more	All funds have been spent with 34 landowners receiving

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Project Supplemental Cost Share			funding for BMP implementation	payment
09-2500: Crooked Creek Watershed Project Supplemental Cost Share Phase II	June 1, 2013-April 30, 2014	Federal:\$50,000 Match:\$75,000	To supplement project 11-1400 with more funding for BMP implementation	Twenty two BMP's have been written. All funds have been allocated. Thirty nine applications have been approved with twenty four landowners receiving payment

## Cache River (NPS Priority):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-1600: Cache River Monitoring Project	July 1, 2011- June 30, 2014	Federal: \$254,420 Match: \$211,232	To measure the effectiveness of the BMPs implemented with the Mississippi River Basin Initiatives (MRBI). Constituents monitored include measures Total Suspended Solids, Turbidity, Dissolved Oxygen, pH, Nitrate, Nitrite, Orthophosphate, Total Nitrogen, and Total Phosphorus.	A total of 6 sites have been identified for monitoring. A total of 777 samples analyzed.
13-500: Middle Cache River Watershed Monitoring	July 1, 2013-June 30, 2016	Federal: \$307,425 Match: \$242,673	To measure the effectiveness of the BMPs implemented with the Mississippi River Basin Initiatives (MRBI). Constituents monitored include measures Total Suspended Solids, Turbidity, Dissolved Oxygen, pH, Nitrate, Nitrite, Orthophosphate, Total Nitrogen, and Total Phosphorus.	QA is in place and monitoring is under way
13-900: Poplar Creek Watershed Improvement Project	July 1, 2013-June 30, 2016	Federal: \$106,920 Match: \$148,920	To reduce or eliminate erosion in the Poplar Creek Watershed through the implementation of BMP's	No significant accomplishments to date



**Illinois River (NPS Priority):**

<b>Project</b>	<b>Project Timeline</b>	<b>Budgeted Dollars</b>	<b>Project Description</b>	<b>Project Accomplishments</b>
11-400: Evaluation and Design of Rain Gardens for Enhancement of Water Quality in the Illinois River watershed	July 1, 2011- June 30, 2014	Federal: \$210,288 Match: \$160,627	To reduce nutrient and sediment load into the Illinois River watershed and to improve water quality. Implementation of 30 Demonstration Rain Gardens in Public/Quasi-public locations in the Illinois River Watershed and to institutionalize rain gardens as a nonpoint source best management practice in Northwest Arkansas.	This project has developed a list of potential rain garden demonstration cooperators. During the past project year, 15 rain gardens were installed and along with project 11-300, 78 field days and 14 training sessions were conducted.
11-500: Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin	Please see Beaver Reservoir/Upper White	Please see Beaver Reservoir/Upper White	Please see Beaver Reservoir/Upper White	Please see Beaver Reservoir/Upper White

**Lake Conway-Point Remove (NPS Priority):**

<b>Project</b>	<b>Project Timeline</b>	<b>Budgeted Dollars</b>	<b>Project Description</b>	<b>Project Accomplishment</b>
11-600: Water Quality Monitoring for the Lake Conway Point Remove Watershed (HUC #11110203)	July 1, 2011- October 31, 2014	Federal: \$373,384 Match: \$260,832	Monitoring water quality in the Lake Conway Point Remove watershed. The project is collecting, analyzing and reporting water quality and discharge data to provide parameter loadings and unit area loadings in assorted 12 digit HUCs.	A QAPP has been developed and approved. Ten monitoring stations have been installed and 1,245 grab samples have been collected. 1,140 have been analyzed.
11-700: Conway County Point Remove Water Quality Project	July 1, 2011- June 30, 2014	Federal: \$69,000 Match: \$56,000	To implement various BMPs including waste transfer, cover crop, pasture and hayland planting, nutrient management and waste utilization that will increase the demand for a litter spreader.	Project completed 6/30/2013. 71 Nutrient Management Plans written. Spreader being rented.
12-700 Initiation of Watershed Management Plan (WMP) for Little Creek-Palarm Creek Sub-Watershed and a Low Impact Development Plan for Lake Conway Urban Watershed	August 1, 2012 to July 31, 2015	Federal: \$498,000 Match: \$ 464,000	Initiate the development of a Nine Element EPA Watershed Management Plan (WMP) and develop and implement components of a Low Impact Development Urban Watershed Plan	QAPP has been approved. Implementation has begun on LID projects and development of WMP has begun

## L'Anguille River (NPS and TMDL Priority):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-1700: Water Quality Monitoring for the L'Anguille Watershed (HUC #08020205)	July 1, 2011- September 30, 2012	Federal: \$106,047 Match: \$80,132	Monitoring water quality and loadings in assorted 12 digit HUCs in the greater L'Anguille HUC.	Project completed 12/2012. 575 samples collected and analyzed. Final report submitted on 11/1/2012.
11-1800:Larkin Creek Phase II Monitoring	October 1, 2011- September 30, 2014	Federal: \$109,242 Match: \$89,775	Monitoring BMP effectiveness	268 Samples have been analyzed
11-1900: Demonstration of runoff, sediment and nutrient loss reduction with conservation tillage of soybean/rice rotations in the L'Anguille Watershed (HUC# Code08020205)	July 1, 2011- December 31, 2014	Federal: \$163,000 Match: \$123,565	To demonstrate the effectiveness of conservation tillage of soybean-rice rotations to enhance soil water storage and reduce phosphorus (P), nitrogen (N) and sediment loss in runoff.	All monitoring equipment has been installed and 360 samples collected and analyzed. One field day has been held with 150 attendees.
12-300 Cross County- L'Anguille River Watershed Water Quality Project	July 1, 2012 – June 30, 2015	Federal: \$ 148,000 Match: \$187,500	Promote and encourage implementation of the Best Management Practices (BMPs) to target the ongoing problem of sedimentation from agricultural lands.	Twenty one applications have been approved with ten applicants receiving payment.
12-400 Lower L'Anguille River Watershed Cost-Share Project – Phase IV	July 1, 2012 – June 30, 2015	Federal: \$ 150,000 Match: \$ 200,260	Encourage the use of specific Best Management Practices (BMPs) to continue addressing the problem of sedimentation from agricultural lands.	Twenty four applications have been approved with eighteen applicants receiving payment.
12-800: Water Quality Monitoring for the L'Anguille River Watershed	July1, 2012- September 30, 2015	Federal:\$253,668 Match:\$189,395	The primary goal of this project is collecting, analyzing, and reporting discharge data to provide parameter and unit area loadings in various 12 digit HUC's in L'Anguille HUC.	A QAPP has been written and approved by EPA. Monitoring equipment has been installed and there have been 353 samples collected and analyzed.

## Lower Ouachita-Smackover (NPS Priority):

There are no current NPS 319 projects within the Lower Ouachita-Smackover Watershed to date.

## North Fork White (TMDL):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-1300: Lower Norfork Dam Watershed Project	July 1, 2011- June 30, 2014	Federal: \$255,325 Match: \$192,500	Encourage the use of BMPs to continue addressing the problem of sedimentation from agricultural lands and to educate producers on the importance of improving water quality.	70 conservation plans have been written. 30 applications have been approved and paid. All funds have been allocated and spent. A no-till drill and sprayer has been purchased. They are being rented.
09-2200: Lower Norfork Dam Watershed Project Phase II	July 1, 2011- June 30, 2014	Federal: \$89,500 Match: \$134,250	Encourage the use of BMPs to continue addressing the problem of sedimentation from agricultural lands and to educate producers on the importance of improving water quality.	Thirty four applications approved with twenty four receiving payment. Seventy five percent of funds spent.

## Poteau (NPS Priority):

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-800: Water Quality Monitoring for Selected Priority Watersheds in Arkansas: Upper Saline, Poteau and Strawberry Rivers	July 1, 2011- June 30, 2013	Federal: \$175,200 Match: \$138,334	To collect additional water samples across the selected 8 digit HUCs of Upper Saline, Poteau, and Strawberry Rivers to better understand how water quality changes across the headwaters. Estimate nitrogen (N), phosphorus (P), and sediment loads at select sites.	This project was completed in July 2013 and final report submitted to EPA.
11-900: Development of Comprehensive Watershed Modeling for 12-digit Hydrologic Unit Code "HUC" in Selected Priority Watersheds in Arkansas- Phase II (Upper Saline, Poteau, and Strawberry)	July 1, 2011- June 30, 2013	Federal: \$170,393 Match: \$128,542	To calibrate and validate the SWAT model in subwatersheds within the 8-digit HUCs of Upper Saline, Poteau, and Strawberry River watershed assessed and ranked based on their contribution to non-point source (NPS) pollution. A comparison of a yearlong monitoring data output at the 12-digit HUC level will be performed.	All monitoring equipment has been installed and 360 samples collected and analyzed. One field day has been held with 150 attendees.

**Strawberry (NPS Priority):**

<b>Project</b>	<b>Project Timeline</b>	<b>Budgeted Dollars</b>	<b>Project Description</b>	<b>Project Accomplishments</b>
11-800: Water Quality Monitoring for Selected Priority Watersheds in Arkansas: Upper Saline, Poteau, and Strawberry	Please see Poteau	Please see Poteau	Please see Poteau	Please see Poteau
11-1000: Strawberry River Improvement Project	July 1, 2011- June 30, 2014	Federal: \$178,662 Match: \$147,146	To implement conservation plans on 40,500 acres of pasture and hay land, ultimately to remove the Strawberry River from the list of impaired waterbodies.	Thirty one applications have been approved, Twenty seven applications have been completed, and Ninety percent of funds have been spent.
11-1100: Strawberry River Sub Watershed Improvement Project	July 1, 2011- June 30, 2014	Federal: \$182,388 Match: \$149,960	To implement conservation plans on 42,572 acres of pasture and hay land, ultimately to remove the Strawberry River from the list of impaired waterbodies.	Twenty six applications have been approved, Eighteen applications have received payment, and Sixty percent of the funds have been spent.
09-2100: Strawberry River Supplemental Cost Share	October 1,2012-June 30,2014	Federal: \$75,000 Match: \$112,500	To implement conservation plans on 40,500 acres of pasture and hay land, ultimately to remove the Strawberry River from the list of impaired waterbodies.	Twenty three applications approved with eighteen receiving payment. Sixty seven percent of funds spent

**Upper Saline (NPS Priority):**

<b>Project</b>	<b>Project Timeline</b>	<b>Budgeted Dollars</b>	<b>Project Description</b>	<b>Project Accomplishments</b>
11-800: Water Quality Monitoring for Selected Priority Watersheds in Arkansas: Upper Saline, Poteau, and Strawberry	Please see Poteau	Please see Poteau	Please see Poteau	Please see Poteau

**Other Watershed Projects: Non-Priority/Non-TMDL:**

**Little River Ditches:**

<b>Project</b>	<b>Project Timeline</b>	<b>Budgeted Dollars</b>	<b>Project Description</b>	<b>Project Accomplishments</b>
11-2000 S: Little River Ditches Watershed Monitoring	September 1, 2011- December 31, 2012	Federal: \$126,219 Match: \$95,965	Measure effectiveness of BMPs associated with a MRBI prior to, during, and following BMP implementation.	521 samples have been analyzed.

## Lower Arkansas-Maumelle:

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
12-600 Water Quality Demonstration and Education Program for Main Street Little Rock	July 1, 2012- June 30, 2015	Federal: \$900,000 Match: \$678,950	To demonstrate the benefits of LID within the downtown Little Rock area and to promote and educate the public on the benefits of such practices.	The city of Little Rock is currently in the design phase and site assessment to locate LID practices. Anticipate delays due to potential relocation of existing underground infrastructure.

## Spring:

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
11-1200: Southfork of the Spring River Sub Watersheds Project	July 1, 2011- June 30, 2014	Federal: \$282,725 Match: \$385,867	To maintain or restore all designated uses of the Southfork of the Spring River Sub Watersheds through voluntary participation of landowners and land users. Implementation of 150 conservation plans and 6.5 miles of stream bank protection	Development of 81 farm plans has been finished. 66 applications have been approved with 6 cancellations. 60 applications have received payment and over 90% of the funds have been spent.

## State Wide Projects:

Project	Project Timeline	Budgeted Dollars	Project Description	Project Accomplishments
12-500: Arkansas Watershed Stewards Captains and Corporals Program	July 1, 2012- June 30, 2014	Federal: \$189,808 Match: \$143,188	To develop a program that builds the capacity, and encourages the formation of watershed groups to plan, initiate, and complete watershed activities that promote or enhance water quality	An advisory committee has been formed. A draft "Arkansas Captains and Corporals Steward Program" guide has been drafted and under current review. The review has been completed and the project is currently holding Watershed Steward classes throughout the state.

## 9 MILESTONE REPORTING

### The 2013 Accomplishments toward the 2011-2016 NPS Management Program: Appendix A from the 2011-2016 NPS Management Plan:

The Arkansas 2013 Annual Report is the documentation of the progress made toward achieving the NPS Management Program Plan. While the main focus of work done is in the field of agriculture, this program has made contributions toward resource extraction, surface erosion, silviculture and urban runoff activities. Objectives listed below are milestones that ANRC and other stakeholders from the state developed and are trying to achieve utilizing the 2011-2016 NPS Management Plan as a guide. The status of the milestone is dependent on progress made in this past year, even though these are still in a developmental stage. The progress of meeting the stated milestone is noted in the "status" column and is defined in the following manner:

- **Ongoing:** related projects funded by the NPS Program or others
- **Perpetual:** reoccurring or a continuation of planning or activities funded by the NPS Program or others
- **Partially complete:** significant accomplishment made but additional work is needed or is planned
- **Completed:** the milestone is met
- **No Progress:** no substantial progress made, or when one of the following conditions apply:
  1. Currently no program, mechanism or infrastructure is in place to facilitate meeting the milestone
  2. The milestone is outside the parameters and/or conflicts with the Arkansas NPS Program

Objective	Milestone Description	Status
<b>Agriculture</b>		
4.1	Continue to encourage and provide technical assistance for the development of conservation plans, nutrient management plans and comprehensive nutrient management plans as well as implementation of BMPs through wide-ranging education and outreach programs. Due to the demand for technical assistance in developing conservation plans, nutrient management plans and comprehensive nutrient management plans, there is a need to recruit and train more technical assistance providers. To insure there is not a backlog of requests for developing plans for farmers, additional technical assistance providers are essential.	Perpetual
4.2	Improve measures of behavior change and analyze factors that influence behavior change in order to more effectively target education and outreach programs as well as other incentives.	Perpetual

4.3	Develop tools that enable measurement of the combined effect of implementing multiple BMPs in order to better evaluate the effectiveness of farming systems on the water quality of a watershed or sub-watershed.	Ongoing
4.4	Develop an economic and risk assessment tool for agricultural producers to assist with decisions on management systems related to water quality protection, as resources allow. USDA has developed an assessment tool for use by agricultural producers for decision making on management systems related to water quality protection.	Complete
4.5	Identify additional sources of funding for projects that demonstrate systematic approaches that enable farmers to achieve multiple goals (e.g., conserve water supply and protect water quality while achieving profitability goals).	Completed
4.6.	Improve the availability and access to information on agricultural and other land uses at the watershed and sub-watershed levels in order to better target implementation projects. While maintaining mandated confidentiality, make available information on the types, extent and distribution of land uses, BMPs in use, riparian buffers and total acres enrolled in conservation programs.	Ongoing
4.7	Seek additional sources of funding to increase and improve the effectiveness of technical assistance to agricultural producers in planning resource management and with the implementation of BMPs, with special emphasis on nutrient surplus areas.	Ongoing
4.8	Coordinate conservation planning to take full advantage of cost-share programs for riparian habitat improvement, Wetland Reserve Program (WRP), Conservation Reserve Program (CRP), the Wetland and Riparian Zone Tax Credit Program (through ANRC), and other programs.	Perpetual
4.9	Encourage plans for alternative irrigation water supply, management and supplemental stream augmentation, including off-stream storage of surplus flows.	Completed
4.10	Continue to focus on BMP implementation to improve conservation practices for erosion control, sediment retention, irrigation management and nutrient management on row crop and animal agriculture lands and farm forests. As appropriate, direct technical assistance to landowners in targeted watersheds giving emphasis to developing new conservation plans and riparian areas, especially those that connect established riparian corridors.	Ongoing

4.11	Continue to provide and improve extensive education and training to promote BMP implementation (e.g., risk management, demonstrations to acquaint landowners with the conservation practices most effective in reducing runoff, sediment detachment and transport, including but not limited to no-till, conservation-till, ridge-till, pipe drop outlets, riparian zone management, and wetland restoration).	Perpetual
4.12	Continue to encourage landowners to establish riparian buffers, vegetated filter strips, grass drainage ways, stabilize streambanks, and restore riparian areas.	Perpetual
4.13	Continue to provide technical assistance and make available financial assistance to agricultural operations where cost-share is a component of approved 319(h) implementation projects.	Perpetual
4.14	Develop strategies to more effectively assess the contribution of agriculture as a source of impairment in relationship to other sources of impairment in order to more effectively target resources at the watershed and sub-watershed levels (e.g., in the Illinois River 53 percent of phosphorus load is nonpoint source – how much of the nonpoint phosphorous load comes from agriculture?).	Partially Complete
4.15	Identify nutrient deficit areas more precisely to facilitate export of surplus poultry litter and develop a system for tracking where surplus litter is utilized. Continue to research and develop programs to remove surplus poultry litter from nutrient surplus areas.	Completed
4.16	Work with major integrators and farm workers as well as landowners to encourage input from and cooperation with nutrient management planning and implementation.	Perpetual
4.17	Promote nutrient planning for farms that are below the threshold for classification as a Confined Animal Feeding Operation with dry manure.	Completed
4.18	Expand education for poultry producers with a special focus on the role that the producer plays in the “Big Picture” of nonpoint source pollution management (e.g., the relationship between biological processes and agricultural production processes as they relate to water quality).	Perpetual
4.19	Provide educational and technical assistance to support full implementation of nutrient application rules promulgated by ANRC.	Completed
4.20	Continue to promote positive relationships between state and federal agencies and agricultural producers in order to cultivate open communication in an environment of trust.	Perpetual



Objective	Milestone Description	Status
<b>Silviculture</b>		
5.1	<p>Continue to strengthen outreach and training programs in BMP implementation for landowners and loggers by:</p> <ul style="list-style-type: none"> <li>• Developing additional mechanisms for delivering BMP implementation training targeted at private non-industrial landowners (e.g., educational workshops, expanded local partnerships in areas where there are high concentrations of private non-industrial landowners and increasing emphasis on woodland management in farm planning).</li> <li>• Placing BMP outreach and training programs aimed at private non-industrial forestland owners in the broader economic context on the assumption that landowners will better manage a resource they value.</li> </ul>	Completed
5.2	Continue to partner with the Arkansas Forestry Association and its Forest Practices Committee as well as the Arkansas Timber Producers Association to deliver and evaluate the effectiveness of BMP training to effect behavioral change as measured by BMP implementation, training and technology use.	Completed
5.3	Continue to promote incentives for landowners and/or loggers to increase voluntary BMP implementation. Review options to increase landowner incentives to adopt BMPs.	Perpetual
5.4	Continue to improve the quality of BMP implementation monitoring (e.g., increasing the sample size to improve the validity of subgroup results, identifying sites in riparian areas, and investigating alternatives to better identify the universe of harvest sites).	Perpetual
5.5	Continue assessing the effectiveness of silviculture BMPs to protect Arkansas water quality (e.g., reduce sedimentation) building on ongoing evaluation and recognizing that such assessment is a long-term, ongoing process. Consider conducting special assessments of high-quality headwater streams using synoptic surveys or other methods as resources allow.	Perpetual
5.6	Continue to review new research as it becomes available to re-evaluate AFC silviculture BMP guidelines, involving both scientists and stakeholders in the dialogue.	Perpetual

5.7	The state will participate in/support state, regional, and national forest conferences, workshops, or outreach trainings when appropriate.	Perpetual
5.8	Provide specialized technical assistance, outreach, supplies and/or equipment as appropriate to enhance project implementation and assessment.	Perpetual
5.9	Respond to catastrophic events with timely and appropriate assessment of potential water quality effects. React and respond as dictated by situational analysis.	Perpetual

Objective	Milestone Description	Status
<b>Resource Extraction</b>		
6.1	Develop and implement education program for those receiving permits on BMPs to reduce nonpoint source pollution. Encourage participation in education workshops, stream teams and other educational programs through outreach and watershed groups.	Partially Complete
6.2	Continue to educate county and city government officials on resource extraction issues related to NPS pollution so they may identify and appropriately report non-permitted resource extraction activities.	Ongoing
6.3	Explore ways to identify and monitor resource extraction activities (e.g., explore with University of Arkansas Center for Advanced Spatial Technologies with the use of existing spatial data sets to identify resource extraction operations. Explore the possibility of cooperating with the Arkansas Forestry Commission (AFC) on its routine monitoring flights. Determine the cost of satellite imagery to identify "hot spots").	Ongoing
6.4	Continue to strengthen BMPs to fill gaps and remain consistent with changing research and practices. Update Surface Mining BMP Manual as needed. Develop BMPs for oil and gas extraction.	Ongoing
6.5	Create and maintain Geographical Information Systems (GIS) database of all resource extraction operations. Explore methods to use GIS to improve monitoring of BMP implementation and estimate the benefits of BMP implementation.	Partially Complete

Objective	Milestone Description	Status
<b>Surface Erosion</b>		
7.1	Partner with various local and watershed entities to compile and analyze current road conditions and usage, providing information on the number of miles of unpaved roads, surface materials, stream crossings and road density, using analysis of existing data, survey of county officials, and other methods.	Partially Complete
7.2	Review available construction and maintenance BMP manuals for low-volume and unpaved roads. Update and modify manuals as necessary and make available to county road crews and others upon request.	Ongoing
7.3	Use construction and maintenance BMP manual for low-volume and unpaved roads for targeted education programs for county judges, quorum courts, maintenance workers and other interested county/city personnel on pollution prevention for rural roads including construction techniques, preferred surface materials, drainage practices, ditch maintenance, and erosion and sediment control.	Ongoing
7.4	Continue to partner in the development of a BMP manual(s) to address prevention, management and maintenance of runoff from surface erosion, including construction.	No Progress
7.5	Develop an ongoing program to disseminate surface erosion BMPs and information through a variety of means (e.g., distribution of the surface erosion manual, training workshops, website content and demonstration projects).	Partially Complete
7.6	Seek new sources of funding, leverage existing funding and promote increased cooperation aimed at shifting focus from bank stabilization to reach restoration.	Ongoing
7.7	Continue to implement a watershed based assessment protocol and BMPs for stream bank erosion, as funds allow.	Partially Complete
7.8	Prioritize stream reaches and sites for restoration within priority watersheds, as funds allow.	Partially Complete
7.9	Develop and promote education programs for landowners concerning streamside and lake side property management to reduce sources of nonpoint source pollution.	Perpetual
7.10	Develop and promote education programs for landowners and developers concerning proper stream corridor management and for professionals concerning stream corridor restoration practices.	Partially Complete

7.11	Promote tax credits, cost share and other incentive programs that are available for riparian zone and stream corridor restoration projects and conservation easements.	Ongoing
7.12	Improve coordination of existing data among cooperating entities. Current data that are available to help with understanding and addressing this problem include 1) gauging stations/flow data for many streams; 2) ADEQ West Fork White River Watershed Assessment Report, which provides local erosion prediction curves for streambanks; 3) area rainfall data; 4) Geographical Information Systems (GIS) data; 5) U.S. Forest Service hydrological data; 6) The Nature Conservancy (TNC) flow model ; 7) regional discharge curves for the Ozark and Ouachita mountain areas; and 8) ADEQ and TNC eco-regional assessments.	Ongoing
7.13	As funds allow, develop data and conduct analysis to fill information gaps. Examples include: 1) geological survey of ground water; 2) fish and macroinvertebrate data and changes over time; 3) regional erosion prediction curves and streambank erosion potential data; 4) regional discharge curves for the Delta, Arkansas River Valley and Coastal Plains areas; 5) evaluation of riparian areas within critical watersheds; 6) change in stream length over time; and 7) sediment transport data throughout the state.	Perpetual

Objective	Milestone Description	Status
<b>Urban Runoff</b>		
8.1	Assist ADH in evaluating and demonstrating promising alternatives to the standard septic tank/leach field systems as resources allow.	No Progress - #2
8.2	Use Geographical Information Systems (GIS) analysis and special assessments to identify critical areas. Utilize the information to target additional education opportunities for onsite wastewater treatment system outreach and awareness programs in cooperation with the ADH.	No Progress
8.3	Assist ADH in the development and implementation of outreach and awareness programs for home owners and business on BMPs for the proper operation and maintenance of on-site wastewater disposal systems.	No Progress
8.4	Work with ADH to increase awareness of sources of funds available for repairing malfunctioning or improperly installed septic systems.	No Progress #2
8.5	Assess the impact of household and business use of fertilizers, pesticides and other common products that do not require permits but can affect water quality in order to more effectively target outreach and awareness programs aimed at increasing use of BMPs, as resources allow.	Ongoing
8.6	Encourage cooperating entities to work together to maintain a shared library of BMPs for the use, handling, storage and disposal of chemicals, oils and grease, cleaning agents, adhesives, lawn products, etc. that is readily accessible to households, municipalities, employers, and others.	Ongoing

8.7	Continue to develop and implement targeted education programs for specific products and high-impact audiences as resources allow (e.g., fertilizer and pesticide use, storage, handling and disposal for street and road crews, public utilities, golf course managers, and independent lawn maintenance crews).	Ongoing
8.8	Continue to maintain and implement broad-based education programs aimed at increasing awareness and disseminating best management practices to urban and rural households and businesses (e.g., HOME*A*SYST, URBAN*A*SYST).	Ongoing
8.9	Hazardous waste and pesticide container collection programs aimed at agricultural producers will be encouraged to promote to and accept containers from households and businesses as well.	Completed

Note: In FY13, EPA issued a revised guidance for the 319(h) program. One of the recommendations of the guidance was to enhance and or develop more meaningful programmatic milestones. In December of 2013, ANRC submitted a draft of additional/enhanced milestones to EPA for review. It is anticipated that the additional/enhanced milestones will be accepted and subsequently integrated into the Arkansas NPS management program update (Update).

As the additional/enhanced milestones are integrated into the NPS management program, reporting of those milestones in the annual report will subsequently be updated. Consequently, all milestones within the Update may not be reported on each year, only those that have been accomplished or had significant progress.



**Buffalo River, Arkansas**