

Arkansas' Nonpoint Source Pollution Management Program Annual Report 2001



Prepared pursuant to Section 319 of the Federal Clean Water Act

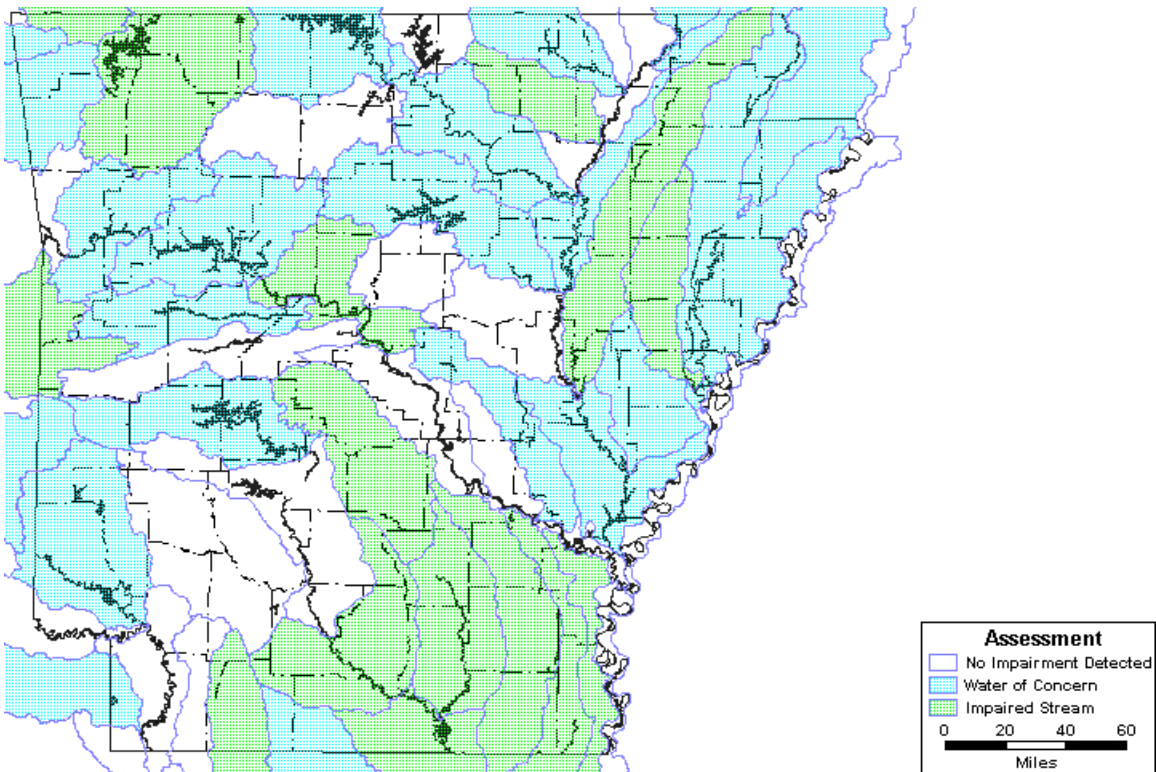


Arkansas Soil and Water Conservation Commission
January, 2002

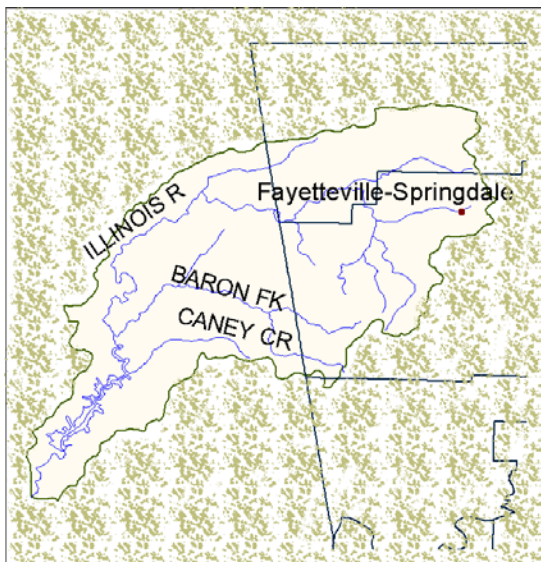
**Arkansas' Nonpoint Source Pollution Management
Program
2001 Annual Report
Priority Watershed Program**

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Unified Assessment Watershed Classification



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Summary of Water Quality in the Illinois River Watershed:

The waters within this watershed have been designated as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. The planing segment, which includes the Spavinaw Creek, Honey Creek, and Little Sugar Creek as well as the Illinois Watershed, contains 203.7 stream miles. Ten permanent monitoring stations and several temporary stations in this segment were utilized to assess 138.4 stream miles. An additional 32.3 stream miles were evaluated. Nonpoint source impacts affecting waters in this segment are primarily from pastureland that is also used for application of poultry waste products. In addition, in-stream gravel removal is destabilizing the streambed and causing excessive bank erosion. Road construction and maintenance is also contributing to significant siltation problems. (2000 Water Quality Inventory Report)

Elevated nutrient levels have been a major concern in the Illinois River watershed, especially phosphorus loading of Lake Tenkiller in Oklahoma. A Clean Lakes study sponsored by the Oklahoma Conservation Commission and completed in 1996 recommended that nutrient input into the reservoir be reduced by 40% as a short-term goal and gave a long-term goal of 70 – 80% reductions. Arkansas / Oklahoma Arkansas River Compact Commission has agreed to work toward the 40% reduction goal.

Nonpoint Source Pollution Management Issues:

Arkansas' Nonpoint Source Pollution Management Program for 1998 – 2002 lists the following as potential sources of pollution in the watershed as:

- Confined Animal Management
- Streambank Erosion
- Urban Runoff
- Rural Roads
- Resource Extraction
- Construction

Summary of Management Activities

A summary of projects currently being implemented in the Illinois River basin is given below:

Confined Animal Management:

ASWCC Water Quality Technician Program:

The Benton and Washington County Conservation Districts have employed Water Quality Technicians since the early 1990's. The purpose of these technicians is to prepare custom manure management plans for poultry farms. As of the close of 2001, over 65% of the poultry farms in the watershed had been planned.

USDA EQIP Priority Area: During 2001, applications for assistance were approved for cooperating farmers in the Illinois River Priority Area. In 2001 over 200 producers participated in the Equip Program in the Illinois River Watershed. Over 1500 ac were put into nutrient management plans, 800 ac were started on a prescribed grazing regime, and approximately 10 waste storage facilities were built. These practices along with others involved in this and other programs will have a positive effect on the health of the watershed.

Poultry Producer Training Program:

During the fall of 2000, the ASWCC, NRCS, Cooperative Extension Service, Washington and Benton County Conservation Districts and the Poultry Industry cooperated to provide water quality management training to poultry producers. More than 300 growers received training from the cooperating agencies and industry team.

Section 319(h) Project 98-600 (Illinois River BMP Implementation & Phosphorus

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Management Demonstration): The goal of the project is to implement BMPs on agricultural land that has the highest potential for reduction of nutrient transport, particularly phosphorus, into the Illinois River. Another parallel goal is to demonstrate the effectiveness of BMPs and to educate the public about the aquatic effects of nutrients in lake systems. Selected farms will be integrated with local farm education and grazing programs to demonstrate the benefits of the BMPs to interested agencies and landowners.

Section 319(h) Project 98-700 (Mud Creek Urban Nonpoint Source Demonstration): The intent of this project was to create the infrastructure for urban nonpoint source BMP implementation programs. Public acceptance and understanding will make future programs more effective. No water quality or nonpoint source pollution education programs were being undertaken in the watershed area prior to this project. As a result of project efforts, NPS curricula has been added to several area schools, public programs on homesite environmental risk assessment and household hazardous waste management have been developed and initiated, city government officials have become partners in NPS education (stenciling stormdrain inlets and labeling creeks and drainage pathways), and television and print news coverage has helped promote project successes and enhance public awareness of NPS issues and solutions.

Section 319(h) Project 99-500 (Upper Ballard Creek Watershed Project): This project is the first phase of a comprehensive watershed project addressing the Upper Ballard Creek, a sub-watershed of the Illinois River. The Washington County Conservation District has conducted an inventory of potential pollutant sources in the watershed. The Cooperative Extension Service has been conducting an education program targeted at the identified sources. According to the Cooperative Extension Service personnel the agricultural producing community in the watershed has responded well to the Extension efforts and want to start using the BMPs on their own land. The only hindrance to the farmers beginning to implement the BMPs is the expense, which most of the farmers cannot afford without assistance. Discussions are underway to begin a cost share program in this watershed.

Section 319(h) Project 00-400 (Mud Creek Expansion Project): The intent of this new phase of the Mud Creek Project (98-700) is to

lay the framework for future urban nonpoint source BMP implementation programs. The basic tenets and methods of successful educational tools and programs developed in the initial Mud Creek Project will, with minor adaptations, be applicable in many Arkansas urban watersheds, as well as those from other states. An "Urban NPS Toolbox" and outline of educational methods will be developed, packaged, and shared with environmental educators across Arkansas so that they, in turn, can teach urban populations about the issues concerning NPS pollution and the ways in which they can individually change their behavior to improve and protect water resources throughout the state.

Section 319(h) Project 01-1100 (Lincoln Lake Project): The Lincoln Lake project goal includes the development of a watershed management plan for the watershed. The plan will be developed by looking at the current status of the watershed compared with the previous data. The project will look at what BMPs have already been implemented in the watershed and try to evaluate the effectiveness and therefore the future worth of further implementation of those BMPs.

Savoy Experimental Watershed: The University of Arkansas is continuing to develop the Savoy Experimental Watershed in the Illinois River basin. This study area is used cooperatively by the U of A, the USDA-ARS, USGS and ADEQ to study the impacts of animal waste management on water quality in the Ozarks, as well as alternative uses of animal waste products.

Streambank Erosion:

Section 319(h) Project 99-100: The Washington County Conservation District was designated by the ASWCC to conduct an assessment of non-point source phosphorus loading into Ballard Creek watershed in Washington County. Previous research had shown that the Ballard Creek watershed was one of the largest contributors of phosphorus loading into the Illinois River watershed. The assessment considered sheet and rill erosion of pastures, eroded sediment from roadside ditches, and from streambanks. Other possible sources that were examined were failed septic systems and eroded sediment from forested areas. The goal of this project was to quantify the contributions from each of these sources.

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The results of this study showed that 51% of the soil test phosphorus entering the Ballard Creek watershed was from streambank erosion. Sediment from pasture erosion contributed 40% and road ditches 10% of soil test phosphorus to the watershed.

The conclusion reached as a result of the data analyzed in this assessment indicated that non-soluble phosphorus transport by sediment detached from sheet and rill erosion is a moderate contributor to total phosphorus loading in Ballard Creek. The only other apparent source of phosphorus is soluble phosphorus transported by runoff from various sources.

Resource Extraction: The mining division of the Arkansas Department of Environmental Quality, Regulation 15, now regulates Resource extraction from surface waters.

Construction: Phase I of the NPDES stormwater program requires construction sites of five acres or greater to implement an erosion/sediment control management plan. The Arkansas Department of Environmental Quality Permits Section administers this program.

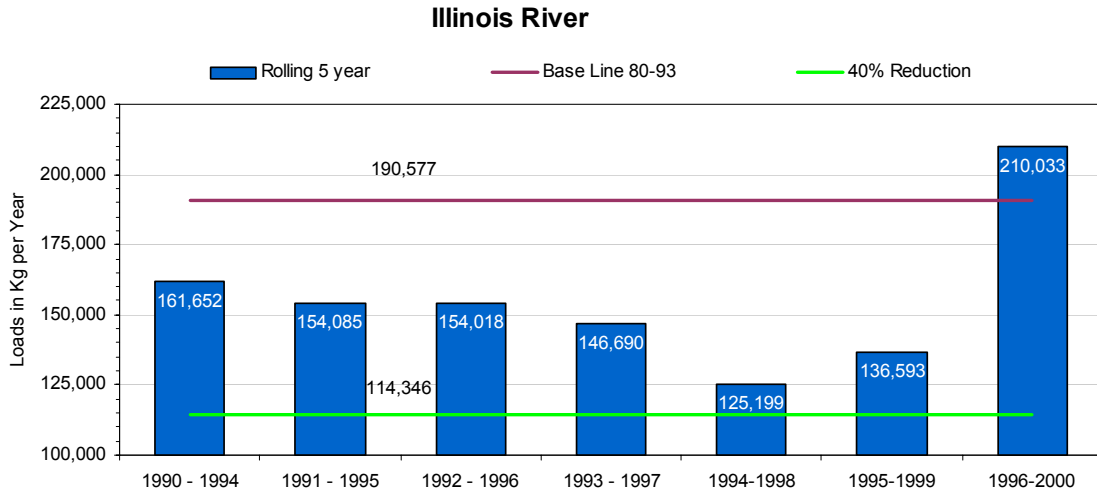
Section 319(h) FY 01 Project 700 Construction Site BMP Workshops and Demonstration Project: This project, started in July 01, will educate professionals in the construction industry about the recently promulgated phase II storm water regulations and current Best Management Practices for erosion control. It will also demonstrate the proper installation, operation, and effectiveness of construction site

BMPs.

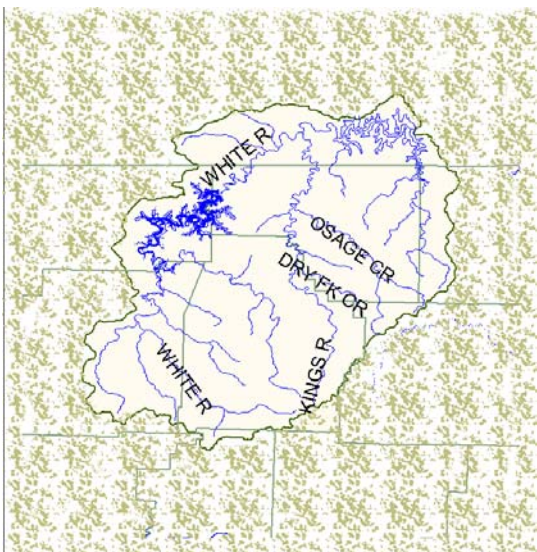
Water Quality Trends

Arkansas and Oklahoma monitor progress in meeting the 40% phosphorus load reduction goal by comparing a rolling five-year average load to the historic data from the period of 1980 through 1993. Data from the ADEQ's ambient monitoring stations are used in Arkansas to monitor the trend.

The five-year rolling average trend had been downward. However, in a separate study conducted by the U of A using storm event monitoring at HWY 59 a 28% increase in total phosphorus load was measured from 1997 to 1998. Almost the entire increase can be attributed to a single storm that occurred on January 4, 1998. Unfortunately, there is not a history of storm event sampling on the stream for comparison. The 2000 report to the Arkansas River Compact did show a dramatic increase in phosphorous loads for 2000. The reason for the sharp upturn is not known, but it is suspected that changes in sampling methods had some impact.



Upper White River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Upper White River Watershed:

All waters within this segment are designated for propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural, and industrial water supplies. About 20% of these waters are designated as outstanding state or national resource waters. Approximately 208 miles of streams were monitored for use support utilizing data from 11 routine monitoring stations. An additional 193.3 miles were evaluated. Aquatic life use was assessed as not supported in 33.4 miles of the West Fork of the White River. The major cause was high turbidity levels and excessive silt loads. Three primary sources are cited: (1) agriculture land clearing; (2) road construction and maintenance; and (3) gravel removal from streambeds. A point source discharge to Holman Creek has impaired the drinking water uses of the lower section of this stream with discharges of excessive nitrates. (2000 Water Quality Inventory Report)

Unified Watershed Assessment:

Beaver Reservoir watershed (The western half of the Upper White River) was selected as top priority. Selection factors within this 8-digit hydrologic unit watershed included (in no particular order):

- one state extraordinary water resource,
- one imperiled aquatic species,
- drinking water supplies serving a population of about 250,000,
- one state impaired water body,
- numerous state waters of concern,
- three USDA EQIP projects,

- one state 319 priority area, and
- Interstate waters of concern.

Nonpoint Source Pollution Issues:

Arkansas' Nonpoint Source Pollution Management Program for 1998 – 2002 lists the following as potential sources of pollution in the watershed as:

- Agricultural Operations (Confined Animals and Pasture)
- Rural Roads
- Resource Extraction

Other reports (“Water Quality Macroinvertebrate and Fish Community survey of the Upper White River Watershed” by the Arkansas Department of Environmental Quality (ADEQ) and “Beaver Lake Clean Lake Study” by FTN Associates, Ltd.) indicate that on-site wastewater disposal and urban runoff may be issues in some areas.

Summary of Management Activities

The Nonpoint Source Support Group selected the Beaver Lake as its top priority watershed. of management measures. Incremental funds from EPA's section 319(h) program totaling 1.9 million dollars are targeted at the watershed with roughly 1.5 million dollars of non-federal matching funds provided by State and Local Groups.

A summary of projects currently being implemented in the Upper White River basin is given below:

Confined Animal Management:

ASWCC Water Quality Technician Program: The Carroll, Madison and Washington County Conservation Districts have employed Water Quality Technicians since the early 1990's. Technicians prepare custom manure management plans for poultry farms. As of the close of 2001, approximately 77% of the poultry farms in the watershed are utilizing manure management plans. Many of the plans are several years old and in need of revision.

USDA EQIP Priority Area: The Upper White River contains two EQIP priority areas, the Beaver Lake and War Eagle Watershed project and the Upper White River Watershed Project. In 2001 the Beaver Lake and War Eagle area utilized \$102,497 of EQIP funds. The projects goals included implement resource management systems on 40 animal waste operations, 60 planned grazing systems, develop nutrient management plans on 16,500 acres, reduce soil

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loss on 40,000 acres through pasture and hayland practices, and stabilize 10,000 feet of eroding stream-bank. . The Upper White River area utilized EQIP funds totaling \$477,517. The Upper White River project's goals include implement 30 resource management systems, 45 nutrient management plans per year, 1000 acres of pasture and hayland management, 3000 feet stream-bank stabilization and 45 animal waste management plans per year.

Poultry Producer Training Program: During the fall of 2000 the ASWCC, NRCS, Cooperative Extension Service (CES), Washington, Benton County, Carroll and Madison Conservation Districts and the Poultry Industry cooperated to provide water quality management training to 189 of the poultry producers in the watershed.

Section 319(h) Project 99 Incremental Funds: Both the Washington and Madison County Conservation Districts provide technical assistance targeting agricultural conservation practice implementation. Water quality technicians will work with livestock producers to develop Comprehensive Nutrient Management Plans. Approximately \$600,000 was available through the ASWCC to cost share with landowners on the implementation of conservation practices. To date \$244,967.98 has been allocated to contracts with 85 producers. Of the money allocated \$74,414 has been paid out for completed practices.

"Beaver Lake Watershed and Use Area" USDA: This CES project emphasizes nonpoint pollution prevention in urban and rural areas. Successful educational programs target urban homeowners, agricultural producers, school youth, civic club members, and local government. The goal is to encourage voluntary adoption of Best Management Practices.

Section 319(h) Project 01-1200 Beaver Lake Awareness Project: Educating and promoting awareness among stakeholders is an initial step in reducing pollutant loads to regional water resources. The University of Arkansas Cooperative Extension Service has a history of grassroots planning by involving key community leaders in identifying community issues and needs, planning educational programs, and evaluating their impact. This same format will be used to gather stakeholder support and input for Beaver Lake Watershed water quality awareness and education efforts across Benton, Carroll, Madison, and Washington Counties. Educational programs will emphasize successful

programs such as the Urban Home*A*Syst environmental homesite self-assessment program, Fayetteville's Pollution Prevention Partners' "Pollution Prevention Starts at Home" program, and hands-on youth water quality education programs as well as others identified and developed through local steering committees.

Streambank Erosion: *Section 319(h), FY 98, Project 400, Demonstration of Stream-bank Restoration and Section 319(h), FY 99, Incremental Funds:* The Madison County Conservation District is demonstrating vegetative stream-bank stabilization practices on the War Eagle Creek. Approximately 380' of stream-bank has been stabilized. Restoration planting was completed in Spring of 2001. Cost sharing assistance is available for this practice through the ASWCC.

Rural Roads: *Section 319(h) FY 99 Incremental Funds:* The Madison County Conservation District has received \$150,000 to use as matching funds with the County for rural road erosion control practices. Madison county has completed 2 sites and has one site that is still in the works. The total completed is over 6 miles of rural roads hydro-seeded.

Resource Extraction: The mining division of the Arkansas Department of Environmental Quality, Regulation 15, now regulates Resource extraction from surface waters.

Construction: Phase I of the NPDES storm-water program requires construction sites of five acres or greater to implement an erosion/sediment control management plan. Phase II of the program requires municipalities with a population of 100,000 or less that operate a storm-water system to permit construction sites of one acre or more as well as certain industries. The ADEQ Permits Section administers this program.

Section 319(h) FY 01 Project 700 Construction Site BMP Workshops and Demonstration Project: This project, started in July 01, will educate professionals in the construction industry about the recently promulgated phase II stormwater regulations and current Best Management Practices for erosion control. It will also demonstrate the proper installation, operation, and effectiveness of construction site BMPs.

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Urban: Section 319(h) FY 99, Incremental Funds Project: Provides support to the City of Rogers to develop an Urban Nonpoint Source Assessment and Management Plan for their portion of the watershed.

Public Outreach: Section 319(h) FY 99, Incremental Funds: A Washington Co Cooperative Extension Agent, with the help of a steering committee, is conducting several programs including adult and youth education. The agent has made contacts with several science teachers in the West Fork of the White Watershed, who are using educational material provided by the project to introduce their students to the problems and solutions to NPS pollution.

Assessment: *Section 319(h) FY 99, Incremental Funds:* The ASWCC and ADEQ are conducting an assessment of the West Fork of the White River to determine pollutant sources. The assessment work will continue through 2002.

Water Quality Trends

In 1997, Drs. Soerens, Haggard and Parker of the U of A Civil Engineering Department and the Arkansas Water Resource Center completed an

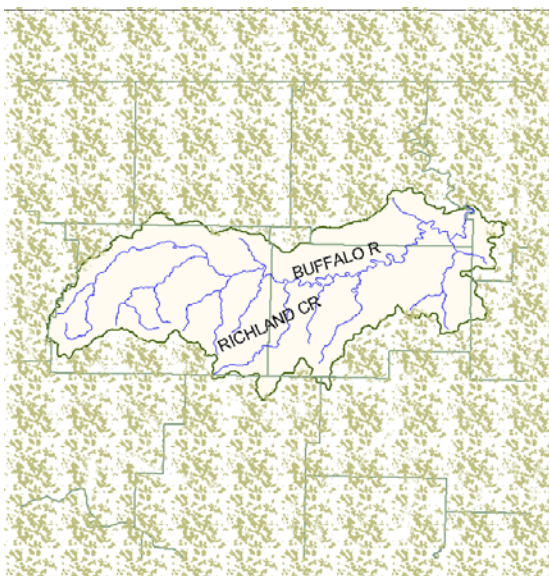
analysis of water quality data collected during the Beaver Lake Water Quality Enhancement Project (US COE). The analysis used the modified Seasonal Kendall test for trends. This test compares a data value to data values taken during the same “season” in subsequent years. Trend analysis calculated decreasing trends for ortho phosphate and total phosphate at all stream and lake sites, although most of these trends were not statistically significant and there was uncertainty in the phosphorus data. Three stream sites, three lake sites and the combined lake data showed decreasing orthoP trends which were significant at the $\alpha = 0.10$ level. No total P trends were statistically significant. Trends in other water quality parameters were non-uniform and showed few significant trends.

Storm event sampling stations have been installed on the Kings River at Hwy 143 and the White River at Wyman Bridge. Parameters analyzed are discharge, nitrate nitrogen, total phosphorus, ammonia, total Kjeldhal nitrogen, and soluble reactive phosphorus.

Load calculations for sampling sites monitored in 2000 by AWRC.

	Discharge	NO3-N	T-P	NH4	TKN	PO4	TSS
West Fork	384 cfs	0.64 mg/l	0.51 mg/l	0.04 mg/l	1.09 mg/l	0.05 mg/l	250.54 mg/l
Kings River	235 cfs	1.19 mg/l	0.59 mg/l	0.05 mg/l	1.00 mg/l	0.22 mg/l	169.42 mg/l
West Fork	Annual loads lbs/yr	486276.71	387501.75	30392.294	828190.02	37990.368	190360000
Kings River	Annual loads lbs/yr	553333.67	274341.9	23249.314	464986.28	102296.98	77698824

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Summary of Water Quality in the Buffalo River Watershed:

Designated uses of waters in this segment include propagation of fish and wildlife; primary and secondary contact recreation, domestic, agricultural and industrial water supplies. Almost 48 % are also designated as outstanding state or national resource waters. Only one routine monitoring station is located in this segment; however, over the past several years, a cooperative project with the Buffalo National River has added nine sites on the Buffalo River, 20 tributary sites and three spring sites. This has allowed for a much more detailed assessment of the river and its tributaries. All waters assessed in this segment met all designated uses. However, due to the designation of these waters as an extraordinary resource, the very sensitive environmental conditions, the significant recreational potential and a substantial change in land use activities in some areas of the watershed, the Buffalo River has been listed as a threatened water-body in the nonpoint source assessment. Although nutrient values are low in the Buffalo River, nitrite/nitrate-nitrogen values have shown a distinct increase in a downstream direction during the 1989 – 1993 period (see 1996, 305(b) report). This was very evident in the maximum values recorded in the main channel sites. A similar, but less, pronounced pattern was also demonstrated by average concentrations, although a noticeable decline was noted near the mouth of the river. The most significant increases were noted below Boxley

Valley and below Mill Creek. Of the 20 tributary sites, highest nitrite/nitrate-nitrogen concentrations were found in Mill Creek, Calf Creek, Brush Creek and in Tomahawk Creek. The significantly higher minimum values in Mill Creek indicate a more continuous input of nitrates from a point source. Concentrations of this parameter in the three springs sampled were about three times greater than main channel values. (2000 Water Quality Inventory Report)

Non-point Source Pollution Management Issues:

Conversion of forest to pasture is the most common activity noted with respect to water quality in the Buffalo River. Over the last three decades, over 90,000 acres of forest have been converted to other uses. Assessments conducted by the ADEQ indicate that the waters are currently meeting all designated uses. Therefore, management activities in this watershed are considered preventative rather than restorative. Potential sources of pollutants in the watershed are:

- Agriculture
 - Confined Animal Management
 - Pasture Management
- Streambank Erosion
- Rural Roads
- Recreation

Summary of Management Activities

A summary of projects currently being implemented in the Buffalo River Watershed is given below:

Agriculture:

ASWCC Water Quality Technician Program: The Water Quality Technician in Boone County is assigned to work half time in the Buffalo River Watershed.

USDA PL 566 Project, Buffalo Tribs: The Buffalo River Tributaries PL 566 Watershed Project was initiated in 1996 and continues to be funded on an annual basis. The goals and current implementation of this project are:

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Practice	Goal	Imp.
Dairy Waste Management Systems	25	6
Pasture improvement/reestablishment	33000 Acres	4,235
Riparian Zone Protection	34 Miles	1.4
Riparian Easements	820 Acres	0
Streambank Stabilization	3 Miles	0.90



The Buffalo National River hosts approximately one million visitors annually.

Section 319(h) Project 96-1000 (Dairy Manure Management Alternatives" Demonstration Project. The objective of this project is to show that dairy operations with a dry waste management system can be operated without significant impacts to water quality and to reduce waste loads from the study sites and establish dry waste system design/operation guidelines that improve water quality and are practical. The ADEQ is the lead agency involved, with assistance from the Boone County and Buffalo Conservation Districts. The ADEQ has reviewed waste management practices at demonstration farms and has designed a local watershed assistance program for dairy farmers in which waste-handling services will be available through the Buffalo Conservation District. The ADEQ has reviewed waste management practices at demonstration farms and has developed a local watershed assistance program for dairy farmers that will provide manure-handling services through the Buffalo Conservation District

Section 319(h) Project 01-1800 Newton county Buffalo River Cost Share Project This project is providing public awareness, technical assistance, and cost share assistance to agricultural producers in the Buffalo River watershed in Newton County. The Conservation District personnel will inform the public about the project through newsletters, press releases and fact sheets made available to the public. The District will also provide technical assistance to producers to implement BMP's. The practices that will be cost shared will be those that have a potential for reduction of nutrient transport and soil erosion.

Conservation plans completed:

Year	CNMP	WHIP	FIP
2001	12	6	6

Streambank Erosion:

Riparian Restoration/Streambank Stabilization Project: National Park Service, Buffalo National Rive. Over the last several years, the Buffalo National River has used funds from the Natural Resources Preservation Program of the National Park Service to construct over one mile of cedar revetments at thirteen stream bank erosion sites, to construct three miles of fencing to exclude cattle from riparian buffers on park land, to cost share on an additional two miles of fencing and to reforest 5.4 miles of river.

Section 319(h) Project 99-900 (Buffalo River Riparian Zones): The Boone County Conservation District is initiating a demonstration of non-structural streambank stabilization projects. The District has completed one Streambank restoration site of 307 ft and is currently working on another site.

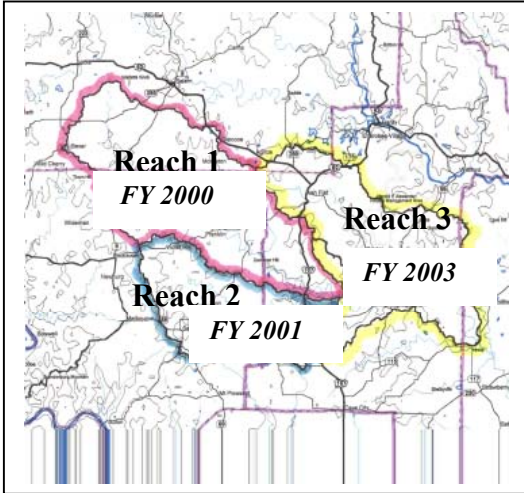
Public Outreach: The ADEQ has a field resource specialist in the watershed to offer assistance in water quality issues and information. Also, the ADEQ and the Newton County Conservation District held a "Conservation Appreciation" day for local citizens on current conservation projects in the Buffalo River Watershed. Over 100 people attended the event, which included information booths and presentations.

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Water Quality Trends

There are no studies currently available that indicate a trend in water quality in the Buffalo River over time. The ADEQ's 2000 Water Quality Inventory Report indicates that all designated uses are met at this time. There are two studies currently being conducted that should provide a good base line for future reference. 1) The National Park Service has contracted with the University of Central Arkansas to develop a biomonitoring program specific to the Buffalo River and its tributaries. This study should provide a base line for biologic integrity to be used as a future comparison. The results of this program should be available next year. 2) The National Water-Quality Assessment Program (NAWQA) by the USGS has two basic fixed sites on the Buffalo River, one at the boundary of the Upper Buffalo Wilderness and one at Shine Eye, about one mile downstream from the Highway 65 bridge.

Strawberry River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Strawberry Watershed:

The Strawberry River watershed has many different uses. The watershed offers year-round recreational activities including hunting, fishing, hiking and camping, but canoeing and primary contact recreation activities are probably the most dominant recreational uses. Additional watershed uses include confined animal operations and pasture land for livestock, and silviculture. The Strawberry River is designated as an Extraordinary Resource Waterbody, a Natural and Scenic Waterway, and an Ecologically Sensitive Waterbody. Other designated uses include Primary and Secondary Contact Recreation, Domestic, Industrial and Agricultural Water Supply, and Ozark Highlands Ecoregion Fishery (ADEQ, 1998). In addition, there are several State and Federally listed “endangered” and/or “species of concern” species possibly occurring in the river; including the Strawberry River Darter, the Pink Mucket, Snuffbox, Curtis’s Pearly Mussel, Slippershell, Scaleshell, Western Fanshell and the Rabbits Foot mussel (Harris, 1997). The river also host one of the most diverse fish faunas in the State with approximately 100 species of fish being recorded from the river (Robinson & Buchanan, 1992).

Arkansas' 1998 Water Quality Inventory Report (305(b)) identified two stream segments as not fully supporting the aquatic life use, and two additional stream segments as “waters of concern” for aquatic life use. In addition, one stream segment is listed as a “waters of concern” for the primary contact recreation use. The major cause of the impairment is thought to be

from excessive turbidity from silt and suspended solids loadings, and fecal coliform bacteria entering the creek during storm events.

Nonpoint Source Pollution Management Issues:

Potential sources of nonpoint source pollution in the Big Piney Creek watershed are:

- Agriculture activities
- Unpaved roads and ditches
- Silviculture activities
- Stream bank erosion

Summary of Management Activities

Watershed Management Team: The Strawberry River watershed project is directed by the Four County Steering Committee. This committee consists of representatives from each of the four Conservation Districts in the watershed and technical advisors from State and Federal Agencies and the Nature Conservancy.

Watershed Restoration Action Strategy: A draft Watershed Restoration Action Strategy has been prepared by the ASWCC and has been reviewed by the Four County Steering Committee. The Committee approved the WRAS.

A summary of projects currently being implemented in the Strawberry River Watershed is given below:

Watershed Assessment:

Section 319(h), FY 00 Project (Strawberry River NPS Inventory): The Four County Steering Committee has completed an inventory of pasture, stream banks, rural roads and septic tanks in the watershed. The results are being used in development of the WRAS.

Section 319(h), FY 00 Project (Physical, Chemical, and Biological Assessment of the Strawberry River Watershed): The Arkansas Department of Environmental Quality, starting in the fall of 2000 is conducting a two year intensive water quality assessment of the Strawberry River watershed. Data from this study will be used in development of the Total Maximum Daily Load for the stream and in completion of a final Watershed Restoration Action Strategy. ADEQ has collected fish and benthic macroinvertebrate samples. However,

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none of the samples have been identified. The streambank survey is 50% complete.

Total Maximum Daily Load: The ADEQ is currently scheduled to develop the TMDL for two reaches of the Strawberry River in 2001. Data for the TMDL is still being analyzed and new data from the various projects used to fill in data “gaps”.

Agriculture:

ASWCC Water Quality Technician Program: The IZard County Conservation District employs a Water Quality Technician for poultry farmers for preparation of management plans. This technician is also shared with Sharp county for poultry nutrient management plans.

Section 319(h) FY 00, Project 600 (Strawberry River Agricultural Watershed Project, Reach 1): This project provides technical assistance for livestock producers in the upper Strawberry River watershed concerning pasture improvement practices. A total of 142 farm plans have been requested and 88 plans completed. A total of 296 BMP's have been installed with an additional 205 follow up visits. Cost share on this project for federal monies spent equates to 51 requests for \$104,935 with \$6,728 paid.

Section 319(h) FY 01, Project 900: (Project Strawberry River Agricultural Watershed Project - Reach 2 - Piney Fork): This project will implement conservation plans on 16,170 acres of pastureland in the Piney Fork Watershed. Needs for animal waste BMPs for both dairy & poultry will be addressed as well as practices to reduce sedimentation from unpaved county roads. MOU's with the three counties have been signed and a ranking process is being developed for the farms interested in cost sharing. The reach two project is just beginning and interested landowners are being enrolled into cost sharing. Farm plans should begin being developed within the second quarter of 2002.

Section 319(h) FY 98, Project 1600: (Strawberry River Model Farm): This project will demonstrate pasture and riparian zone management practices in the Strawberry River watershed. A Bermuda grass sprigger and digger have been purchased for use in the watershed. Cross fencing and pasture management have been established on the farm. One field day has

been completed with 30 interested people attending.

Streambank Erosion:

Riparian Zone Tax Credit Program: The ASWCC offers tax credits for landowners willing to restore damaged or degraded riparian zones. Credits may be up to \$5,000 per year for ten consecutive years up to the cost of the project.

Silviculture:

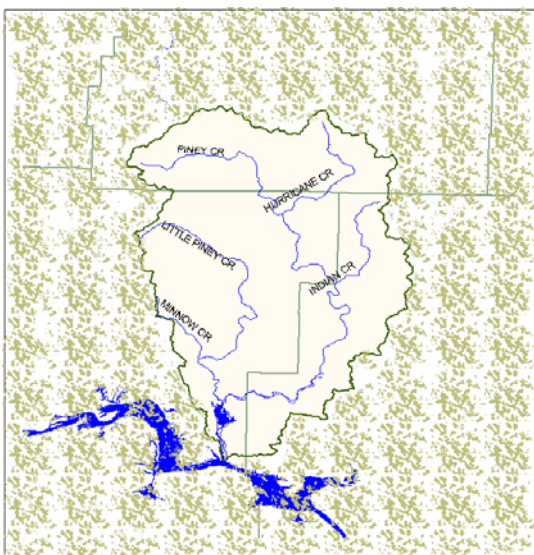
Section 319(h), FY 98, Project 1500 (Strawberry River Forestry Project): This project will be an Information / Education program for forestland owners concerning forestry BMPs and use of professional foresters. The goals of the project is to encourage use of professional foresters by private forestland owners in planning harvests and improve the implementation rate of voluntary forestry BMPs. Four workshops have been held in the Strawberry River Watershed with 250 landowners attending. Two issues of the newsletter have been mailed to 5,183 landowners. Two more additional workshops are planned for the watershed in the next year.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Strawberry River watershed over time. The watershed assessment conducted by the ADEQ in 2000 through 2002 will serve as a base line for future comparison.



Big Piney Creek Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Piney Creeks Watershed:

In January of 1999, the Arkansas Department of Environmental Quality completed an eighteen-month assessment of water quality in Piney Creeks watershed. As a result of this work, it was determined that the Piney Creeks watershed is currently meeting all of their designated uses and are fully supporting the specified aquatic life uses throughout the watersheds. However, there were some areas of concern noted including:

- Occasional high turbidity
- Low dissolved oxygen concentrations at some sampling sites
- Elevated sulfate and TDS concentrations in Home and Curtis Creeks
- Slightly elevated nutrient concentrations
- Elevated fecal coliform bacteria in the lower portion of the watershed
- Eroding Streambanks

Nonpoint Source Pollution Management Issues:

Potential sources of nonpoint source pollution in the Big Piney Creek watershed are:

- Agriculture
 1. Confined Animal Operations
 2. Pasture Management
- Unpaved Rural and Forest Access Roads
- On-site Wastewater Disposal
- Eroding Streambanks

- Degraded Riparian Zones

Summary of Management Activities

ASWCC Watershed Plan Development: A watershed action strategy plan has been developed to address water quality concerns identified in ADEQ's 1999 Assessment. The plan suggests conservation practices for each finding. A water quality technician has been procured to determine the quantity of each conservation practice needed to fully address the water quality concerns.

A summary of projects currently being implemented in the Piney Creeks Watershed is given below:

Agriculture:

ASWCC Water Quality Technician Program: Johnson, Pope and Newton County Conservation Districts all have employed Water Quality Technicians. These technicians work with local livestock and poultry producers to produce waste management plans for their farms. At the end of June 2001, waste management plans had been produced for 95% of producers in Johnson County and 100% of those in Pope County. Livestock producers in the Newton County portion of the watershed are mostly hog producers and required to be permitted by the NPDES program at ADEQ. However, thirteen plans have been produced for growers in Newton County.

Poultry Water Quality Training Program: During the fall of 1998, spring of 1999, and the fall of 2000 the ASWCC, Cooperative Extension Service, Natural Resource Conservation Service, Local Conservation Districts, County Extension Agents and Poultry Integrators cooperated to provide a training program on water quality issues related to poultry. Training programs were conducted in both Johnson and Pope counties.

Section 319(h) FY 99, Project 600 (Demonstration of Pasture Renovation): ADEQ is demonstrating the use of a pasture renovator to reduce runoff of phosphorus and nitrogen from fields fertilized with animal manure by collecting edge of field water quality data. The University of Arkansas is cooperating on the project to demonstrate the efficacy of pasture renovation at the plot level. ADEQ is demonstrating the use of

Big Piney Creek Watershed Annual Nonpoint Source Pollution Management Report

a pasture renovator to reduce runoff of phosphorus and nitrogen from fields fertilized with animal manure. The project provides a pasture renovator to the local Conservation District and cost sharing assistance to farmers in the watershed wishing to try the practice. The project is approximately 50% complete.

Section 319(h) FY 01, Project 2200 The Johnson, Newton, and Pope counties Roadside Erosion Project: The Johnson County Conservation District is spearheading this project. The Conservation District is going to use composted chicken litter in combination with a hydro-mulching process to promote vegetation growth on unprotected roadsides, which would normally be very difficult to do, throughout the Big Piney Creek watershed. The Johnson, Newton, and Pope county governments have shown interest in participating along with the conservation district and the US Forest Service (the Ozark National Forest contains a large portion of the watershed).

Streambank Erosion:

Section 319(h), FY 99, Project 800 (Demonstration of Streambank Restoration): The ASWCC is working with Dr. Robert Newberry, to demonstrate non-structural streambank stabilization practices in the Piney Creek. A site, 1000 ft long, roughly ¼ mile upstream from the Hwy 164 bridge has been completed as a demonstration. This site is visible from the highway and readily accessible for tours and field days. In addition to the demonstration, the ASWCC and Dr. Newberry have conducted training workshops for Conservation Personnel in the design of streambank stabilization projects.



Streambank erosion is a major source of sedimentation in the Big Piney Creek. In many instances, non-structural stabilization practices coupled with riparian zone re-establishment will both reduce sedimentation, and prevent loss of productive pasture.

Wetlands and Riparian Zone Tax Credit Program: The ASWCC offers tax credits for landowners willing to create new or restore damaged or degraded wetlands or riparian zones. Credits may be up to \$5,000 per year for ten consecutive years up to the cost of the project.

Silviculture:

Ozark National Forest: Forestlands within the Ozark National Forest are managed in accordance with the “Land and Resource Management Plan” for the Ozark-St Francis National Forest. This plan requires forest harvests to utilize best management practices and puts a special emphasis on streamside management zones. According to the Arkansas Forestry Commission survey conducted in 1999, the BMP Compliance Rating for forest harvests in federally controlled lands is 96%.

Section 319(h), FY 98, Project 1100 (Forestry BMP Implementation and Effectiveness Monitoring): The Arkansas Forestry Commission is monitoring the rate of BMP implementation by forest loggers in the Piney Creeks watershed. Data collected during the survey will be used to develop additional BMP training materials that will be delivered to foresters across the state. A BMP training session conducted by the Forestry Commission

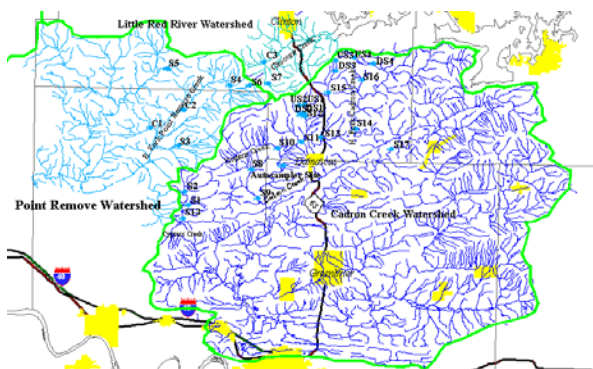
**Big Piney Creek Watershed
Annual Nonpoint Source Pollution Management Report**

was held in the watershed. The BMP Compliance Rating for 1999 is 82%.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Piney Creeks watershed over time. The watershed assessment conducted by the ADEQ in 1999 will serve as a base line for future comparison. All designated uses of the waters in the watershed are currently being met. With continued voluntary implementation of conservation practices by landowners and users in the watershed, we can expect that uses will be maintained in the future.

Cadron Creek Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Cadron Creek Watershed:

All waters within this segment are designated for propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. All waters assessed in this watershed are supporting all designated uses. (1998 Water Quality Inventory Report)

Even though the Water Quality Inventory Report indicates support for all uses in the watershed, the Five-County Cooperative River Basin Study indicates that there is concern for water quality in the basin. Especially noted in the report were concerns over elevated nutrients, bacterial contamination and sedimentation of area lakes and streams. The River Basin Study was an effort of the NRCS with cooperation from the Resource Conservation and Development Council, City of Plumerville, Ar. Dept. of Health, Conway Corp. Arkansas Forestry Comm. the Conservation Districts and the ASWCC.

Unified Watershed Assessment:

Cadron Creek is one of seven top priority watersheds in the Unified Assessment because of the presence of one USDA EQIP project, one drinking water supply serving a population of about 50,000, and one state extraordinary water resource within the watershed.

Nonpoint Source Pollution Management Issues:

The Five County Cooperative River Basin Study identifies the following NPS issues in the Cadron Creek watershed:

- Animal Waste Management (or AFOs)
- Erosion and Sediment Control
 1. Roads
 2. Urban Areas

3. Forest and Grassland

- Grassland Management

Summary of Management Activities

A summary of projects currently being implemented in the Cadron Creek basin is given below:

Animal Feeding Operations (AFOs):

The Cadron Creek watershed contains approximately 100 dairies, over 50 poultry farms and 10 swine farms. Swine farms and dairies are subject to Regulation # 5 of the ADEQ that requires permits for all farms producing liquid waste. Small dairies (<100 cows) may be exempted from the Reg. #5 permit if they have implemented a dry stack waste management system in accordance with NRCS standards.

The following projects are in place in the Cadron Creek watershed to assist with management of AFOs:

ASWCC Water Quality Technician Program: The Conway, Cleburne, White and Van Buren County Conservation Districts have employed Water Quality Technicians since the early 1990's. The purpose of these technicians is to prepare custom manure management plans for poultry and dairy farms. During 2001, the WQTs prepared eight dry litter plans and thirty five wet waste plans. The majority of the wet litter plans were for the application of wet litter from a new caged layer operation.

ADEQ's Liquid Waste Permitting Program: There are 46 liquid waste permits issued in the Cadron Creek watershed. Each permitted farm is required to utilize a waste management system designed and constructed to NRCS technical standards. The ADEQ inspects approximately 1/3 of these farms per year.

USDA EQIP Priority Area: The Cadron Creek priority area was funded at \$150,000 in 1998, \$84,000 in 1999. In 2001, Cadron Creek / Point Remove Creek Watershed received \$94,739. Goals of the project are: 75 animal waste management systems, 120 nutrient management plans per year, reduce soil loss on grazing lands to T on 10,000 acres and to increase the acreage planted in Bermuda by 25%.

Dairy Waste Management Coop Program:

The Van Buren County Conservation District has provided a cooperative waste management

Cadron Creek Watershed Annual Nonpoint Source Pollution Management Report

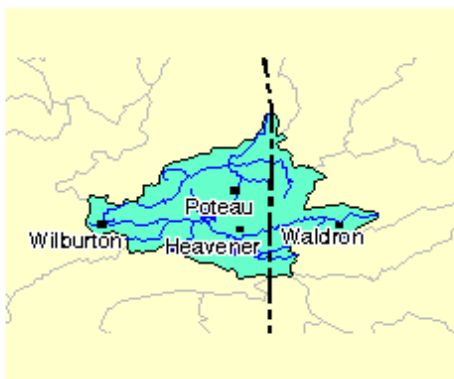
service to dairy farmers in the Cadron Creek watershed for several years. This project was started in 1992 when the District used section 319(h) funds to purchase pond clean out and land application equipment. Cooperating farmers pay a maintenance fee to the District for the clean out service. This allows the farmers to stay in compliance with their liquid waste permit and to utilize nutrients from the animal waste for forage production. The district now operates the clean out project as an ongoing program. During 2001, fourteen pond clean outs totaling more than 3,100,000 gallons of liquid waste were performed on farms in the watershed.



Watershed Assessment

A watershed assessment of Cadron Creek is being conducted by the Conway County Conservation District. The assessment is being conducted on septic tanks (100% complete), county dirt roads (65% complete), streambank erosion occurring along 3rd order and higher streams (0% complete), and pasture conditions (0% complete). The project is to be completed by 2002.

Poteau River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Poteau River Watershed:

The waters within the Poteau River Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. A short section of the Poteau River below Waldron is listed as not supporting aquatic life uses due to elevated metals and nutrients. The remainder of the Poteau River below Waldron has elevated nutrients and suspended sediments, which is a concern for aquatic life support. (Water Quality Inventory Report, 1999)

The State of Oklahoma is very concerned about the quality of water in Lake Wister that receives water from the Poteau River. They have determined that the lake has been eutrophic and excessively turbid has existed since the early seventies. Their study (Wister Lake Watershed Project, Annual Report FY 93) indicates 26% of the phosphorus loading to Lake Wister is coming from the Poteau River.

Nonpoint Source Pollution Management Issues:

According to the ADEQ's 1998 Water Quality Inventory Report, the sources of nutrients and suspended sediments in the Poteau River are agriculture activities, a municipal and an industrial discharge. The only other significant land use in the watershed is for silviculture. Much of the watershed in Arkansas is within the boundaries of the Ouachita National Forest.

Summary of Management Activities

Agriculture:

EQIP: The Poteau River has been an EQIP Priority area since initiation of the EQIP program. In 2000, the area was funded at \$139,586. In 2001, the funding was reduced to \$66,864. The priority area goals are:

- 20 waste management systems / year (3 yrs)
- 45 resource management systems / year (3 yrs) on 8250 acres
- Reduce soil erosion to T on 30,000 acres
- Increase the ratio of warm season to cool season grasses by 25% on 10,000 acres

Lack of full funding has prevented the project from totally meeting these goals.

ASWCC Water Quality Technician Program: The water quality technician from Sebastain County provides technical assistance to poultry farmers in the Poteau River watershed. As of the end of 1998, only about 1/4 of the farmers in the watershed were using Conservation District prepared waste management plans.

Poultry Water Quality Training Program: Roughly 2/3 of all poultry growers in the Poteau River Watershed in Arkansas have attended voluntary training on water quality issues. This training was presented as a cooperative effort of the ASWCC, CES, NRCS, Poteau River Conservation District, Scott County Cooperative Extension Service and the Poultry Industry.

Silviculture:

Ouachita National Forest: Forest harvests in the Ouachita National Forest are managed by the National Forest Service. In 1999, according to a compliance survey conducted by the Arkansas Forestry Commission, the average compliance rating for harvests in the National Forest (Statewide) was 96%.

Arkansas Forestry Commission: The AFC conducts BMP training sessions and compliance surveys on forest harvests on private and industrial lands in Arkansas.

Planning Activities:

Watershed Restoration Action Strategy: The Poteau River Conservation District has prepared the equivalent of a draft WRAS for agriculture for the watershed.

**Lower Little River Watershed
Annual Nonpoint Source Pollution Management Report**



Summary of Water Quality in the Lower Little River Watershed:

The waters within the Little River Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Overall water quality is fair in the basin with the exception of several long-term problem areas.

Several stream segments in the basin display degradation that is the result of agricultural nonpoint pollution. The Rolling Fork River above DeQueen Reservoir has periodically elevated nutrient concentrations that are causing concern for the aquatic life uses. This may be due to point source contributions. (Water Quality Inventory Report, 1998)

Nonpoint Source Pollution Management Issues:

Several studies have been completed concerning the waters tributary to the Millwood Reservoir on the Little River. These studies include the ADEQ's biennial Water Quality Inventory Report and the Nonpoint Source Assessment Report, the NRCS' Little River Basin Study and a Clean Lakes Study completed by FTN Ltd. for the ADEQ. The following were identified in one or more of these reports as potential sources of contamination to the reservoir:

Agriculture	Roads and Ditches
Forestry	Construction
Mining	Degraded Riparian Zones

Agriculture issues are related to Animal Feeding Operations (primarily swine and poultry) and pasture management. This area has the highest concentration of swine farms of the entire state.

Summary of Management Activities

Agriculture:

EQIP: The Little River has been an EQIP Priority area since initiation of the EQIP program. In 1998, the area was funded at \$250,000. In 1999, because of reduced funding on the federal level, that amount was lowered to \$140,000. In 2000, the area was funded at \$254,002. In 2001 the funding was \$171,000. The project goals are:

- 40 animal waste management systems per year for three years
- 60 nutrient management plans per year of 3 years on 27,500 acres
- Reduce soil erosion on forestland to T on 60,000 acres
- Increase the ratio of warm season to cool season grasses on 5,000 acres
- Reduce soil erosion on grazing land to T on 60,000 acres
- Install 100 acres of streamside buffer

Lack of full funding has prevented the project from totally meeting these goals.

ASWCC Water Quality Technician Program: The water quality technicians are employed in Cossatot, Mine Creek and Rich Mountain Conservation Districts. These technicians have provided technical assistance to poultry farmers in the Little River watershed for several years. Approximately 1/2 to 2/3 of the farmers in the watershed were voluntarily using Conservation District prepared waste management plans. In FFY 2001 the water quality technicians prepared 117 plans.

Poultry Water Quality Training Program: Nearly 500 of the poultry growers in the Little River Watershed in Arkansas have attended voluntary training on water quality issues related to poultry production. The lead for this training was by CES and was presented as a cooperative effort of the ASWCC, CES, NRCS, the Conservation Districts, local Cooperative Extension Service offices and the Poultry Industry.

Public Water Quality Education for Lower Little Watershed: The CES has a grant to create public awareness of water quality problems, to deliver

Lower Little River Watershed Annual Nonpoint Source Pollution Management Report

education to promote locally-led conservation efforts, to provide 4-H and youth education through school programs and hold an Annual Watershed Festival/Meeting.

Liquid Animal Waste Management Training: In Arkansas, all producers of liquid animal wastes (mostly swine farmers) are required to attend annual training in waste management for water quality. The Cooperative Extension Service conducts this program with cooperation for the NRCS, ASWCC, ADEQ, and the livestock industry

Silviculture:

Ouachita National Forest: The National Forest Service manages Forest harvests in the Ouachita National Forest. BMPs are required for all harvests within the National Forest. In 1999, according to compliance survey conducted by

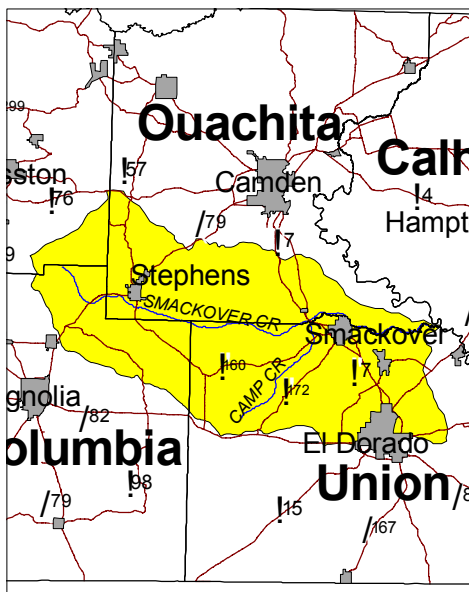
the Arkansas Forestry Commission, the average compliance rating for harvests in the National Forest (Statewide) was 96%.

Arkansas Forestry Commission: The AFC conducts BMP training sessions and compliance surveys on forest harvests on private and industrial lands in Arkansas.

Planning Activities:

Watershed Restoration Action Strategy: The six Arkansas Conservation Districts have formed the Lower Little River Watershed Coalition to advance the cause of conserving the natural resources of the Lower Little River and Millwood Lake. These six Districts have received funding to develop a complete WRAS for the watershed.

Smackover Creek and Ouachita River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Smackover Creek and Ouachita River Watershed:

The waters within the Smackover Creek Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Smackover Creek still displays the same problems now that it has for several decades. However, there has been significant improvement over the last five to ten years in the level of chlorides and total dissolved solids in the stream. The Oil, Brine and Bromine extraction industry has contributed point and nonpoint source contamination to waters in this stream for many years.

(Water Quality Inventory Report, 1998)

Nonpoint Source Pollution Management Issues:

The primary nonpoint source issue in the Smackover Creek watershed is the thousands of acres of land devoid of vegetation because of past oilfield discharge of brine water and liquid oil. Soil erosion is a problem with as much as 4.2-tons/acre loss per year. Soil particles, salts and other contaminants are discharged into Smackover Creek and transported downstream.

Summary of Management Activities

Carlisle Salt Affected Soils Project (CARSAS): The CARSAS project is a long-term project being conducted under the leadership of the Union County Conservation District. This project proposes to utilize innovative soil remediation technologies such as constructed saltwater and brackish water wetlands, commercial aquaculture, improved forestation, development of park and recreational land and waters, demonstration of emerging remediation technologies such as new mulches, chicken and cattle manure and chemical amendments. In addition to facilitating surface remediation while protecting surface and subsurface water, project goals include attracting new industry into Union County. Another primary goal is to demonstrate that well-conceived multi-party environmental action can provide substantial economic and social benefits for local citizens affected with environmentally damaged surroundings.

Section 319(h), FY 98-Project 1000 (Smackover Creek Watershed Restoration Demonstration): This project is demonstrating the use of salt tolerant vegetation as a Best Management Practice for remediating salt affected soils in drainage ways.

Early in this fiscal year this project was considered worthy of an Assistance Grant from Philips Petroleum Company of Bartlesville, Oklahoma. This will greatly assist in providing for additional plants and installation costs that have presented themselves.

During this FY about 80 acres was being remediated using the chosen technology. Progress was made during FY 2000 in terms of establishing additional plant growth within the 100-acre (Total) project site. This growth represents selections from a list of over 100 plant species-both native and exotic. Lengthy wintertime flooding caused some difficulty in maintaining plantings if. Technology transfer tours and field days continue to be conducted at the demonstration site. The goal of the project is that 100 additional acres will be remediated by willing landowners.

Section 319(h), FY 01-Project 2300 (Smackover Creek Watershed Restoration Extension) received a grant to extend the effort started under FY 98-1000. The grant was made by EPA late in FY 01 based on the continued financial support

Smackover Creek and Ouachita River Watershed Annual Nonpoint Source Pollution Management Report

of the Phillips Petroleum Co. while recognizing the difficulties faced by the Principal Investigators, the staff of Union and Ouachita Counties, and landowners in pursuing the goals of the project.

These difficulties were made apparent when gauging the damage to plantings of 99-00 and 01 from summertime drought, wintertime high water and summer rains of up to 10 inches in the relatively small watershed (+/- 2000 Acres) containing the planting areas.

The remaining funds from 98-1000 were spent on carefully selected sites which had better drainage and chemical /fertilizer management. ASWCC now has photos, which indicate much better grass development and ground cover over limited areas near the streambed.

Water Quality Trends

The summer flash floods and wintertime (00-01) high water played havoc with obtaining enough runoff samples in low lying sampling stations so that the project remains short of data sufficient to note any Water Quality trends. Although subjective and incomplete there are numerous deposition areas downstream of the planted sites with improved grass growth.

There was scant evidence of improvement in the tree planting areas during the latter half of FY 2001. At this time ASWCC has no summary counts of number of trees planted, located to 5 acre sites, or number of trees surviving at the close of FY 01.

Water Quality Trends

There have been no water quality studies in Smackover to determine trends in water quality during the last several years. However, in the 1998 Water Quality Inventory Report, the ADEQ states, "there has been significant improvement over the last five to ten years in the level of chlorides and total dissolved solids in this stream." This improvement is attributed to, "increased reliance on saltwater injunction wells, clean up of the extraction sites; improved storage, such as phasing out open pits; and better maintenance of transmission lines, e.g., repair and replacement of broken and leaking pipelines. Monitoring efforts have been focused on finding suitable sites for new plantings over time. Once these are successful other monitoring efforts should provide some measure of Water Quality change.

Late in the winter of 00-01 high water conditions in all planting areas caused runoff sampling and planting to be impossible. The high water also had a deleterious effect on plantings of the years 99 and 00 such that measurement of success was not possible.

**Bayou Bartholomew Watershed
Annual Nonpoint Source Pollution Management Report**



Summary of Water Quality in the Bayou Bartholomew Watershed:

The waters within the Bayou Bartholomew Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Silt loads and turbidity are consistently very high in Bayou Bartholomew, causing degradation to the aquatic life contained in the stream. Bayou Bartholomew also recorded the highest level of the pesticide metolachlor of any station sampled during the reporting period. The entire stretch of Bayou Bartholomew has been assessed as not meeting the aquatic uses due to siltation and turbidity.

Mercury contamination of fish tissue in 42.9 miles of the Bayou Bartholomew and 16.8 miles of Cutoff Creek is limiting fish consumption in this basin. The source of the mercury contamination is unknown. (Water Quality Inventory Report, 1998)

Nonpoint Source Pollution Management Issues:

The following issues have been identified by the technical support group of the Bayou Bartholomew Alliance as being problematic in the Bayou (BBA):

Sediment	Nutrients	Dumping
Log jams	In-Stream flow	Habitat alteration
Diverse uses	Lack of public access	Improper application of chemicals
Chemical barrels	Rock Weirs	Improper irrigation management
Dissolved Oxygen	Lack of information exchange	Mercury
Urban NPS		

Summary of Management Activities

Public Awareness:

- The Bayou Bartholomew Alliance has used funding from a section 319(h) project (FY 96-1100) to develop and distribute over 4000 brochures concerning the Bayou Bartholomew watershed. The BBA continues to conduct public awareness work within the watershed using various sources of funding.
- The Bayou Bartholomew Alliance has developed a newsletter which is mailed to over 1,000 persons who either live along the stream, own land along the stream, or have signed up to receive the newsletter at some Alliance sponsored event.
- In 2001, the Alliance received the "Best Citizen Group Award" from the Arkansas Stream Team program.
- The Alliance is recognized as being the first stream team in Arkansas.
- The Alliance is noted for its numerous volunteer trash clean-ups which to date have yielded over one hundred tons of trash which has been delivered to landfills.
- The BBA has provided workshops for area teachers and developed and distributed teaching modules on a variety of topics including the watershed and its problems, solutions, bottomland hardwoods, wildlife, fishes, and invertebrates.
- The BBA sponsors Hunter Education classes which help to make younger citizens aware of the bayou and its resources.

Information Exchange: The BBA's technical support group consists of professionals from the resource management agencies and other organizations within the state. Open exchange of information and opinions is encouraged.

Bayou Bartholomew Watershed Annual Nonpoint Source Pollution Management Report

Assessment: The ADEQ is using funding from section 319(h), FY 98-project 300 to conduct a watershed wide assessment of water quality in the bayou. The results will be used to fine tune the action items listed in the Watershed Restoration Action Strategy.

The ADEQ has funding from EPA 104(b) 3 grants to investigate development of a model of the Bayou Bartholomew watershed.

Agriculture:

Section 319(h): The Cooperative Extension Service distributed 2,000 copies of a newsletter "On the Bayou" (FY 98-project 800) concerning best management practices for row crop agriculture and irrigation management. During 2000 a thirty-minute slide show focusing on water quality issues was delivered to the BBA to be presented at BBA business meetings. Jefferson and Lincoln County Conservation Districts are providing technical assistance through on-farm planning to row crop farmers in the northern portion of the Bayou (FY 99-400). The goal of the project over three years is 300 on farm conservation plans. Conservation plans continue to be developed and implementation of these plans will occur over the next couple years.

The University of Arkansas at Monticello was conducting demonstrations of no-till cotton in Southeast Arkansas (FY 97-Project 800). Annual tours and field days are held. Support has been building among influential farmers in the watershed for the use of no-till on cotton. This project was completed September 2001.

EQIP: The Bayou Bartholomew Priority area was funded at \$196,000 in 2000 and 2001. The goal of the EQIP project is 180 nutrient and pesticide management systems on 31,500 acres, 120 animal waste management systems on 15,000 acres and reduce sheet and rill erosion by 20% from 15,000 acres.

Ducks Unlimited: Ducks Unlimited provides stop logs for farmers in the Delta to allow them to re-flood their fields after harvest. This practice provides habitat for ducks, and also has a water quality benefit of reducing erosion and sedimentation from these fields. During 1999, 25,500 acres throughout the Delta were flooded

because of this program. An additional 4,200 acres were flooded in 2000.

Silviculture:

The Arkansas Forestry Commission conducts logger-training programs annually in the Bayou Bartholomew watershed. In addition the BBA is scheduled to provide landowner workshops focusing on the specifics of timber sale contracts / harvesting contracts and on alternatives such as conservation easements.

In late 2000, the Alliance received the "Forest Conservationist of the Year" award from the Arkansas Wildlife Federation. The BBA has provided trees to landowners over the years and has now planted almost three-quarters of a million hardwood tree seedlings. These plantings have increased riparian habitat on over sixty miles of stream and increased wetlands by around 8,000 acres. The BBA works closely with the County Conservation Districts to identify restoration opportunities and to provide assistance for such efforts.



Riparian Zone Management:

The BBA has effectively used donations from the Forestry Industry and volunteer labor to replant over 22 miles.

Urban:

The BBA is working with the City of Pine Bluff to prepare an Urban Erosion and Sediment Control program (Section 319(h), FY 99-project 400). In cooperation with the City of Pine Bluff, the BBA is developing a proposal for a trail through 10 miles of riparian corridor. The BBA has also worked with White Hall schools to plant nearly 2,000 cypress trees in an abandoned sewage lagoon now connected to the Bayou.

**Bayou Bartholomew Watershed
Annual Nonpoint Source Pollution Management Report**

During 2001, the BBA has worked with the City of Pine Bluff and recently received a grant from the Arkansas Highway Department to build and develop a nature trail. The trail will wind through 1.8 miles of wetland and riparian habitat along the bayou within city limits and thusly preventing the area from being developed. This will protect the bayou headwaters indefinitely in that portion.

Wetlands:

The Alliance has received the EPA Regional Administrator's Excellence Award for Outstanding Wetland Conservation. The BBA has helped to reclaim wetland by providing planting materials, or in some cases, suing volunteers to do the actual planting. White Hall Middle School students helped to reclaim an abandoned city sewage lagoon along the bayou by planting the five-acre site to cypress trees.

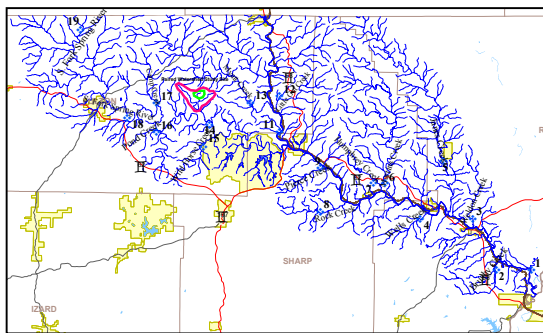
Dumping:

One activity of the BBA is to hold volunteer project days at various points on the Bayou. During 2000, the BBA conducted four volunteer days to clean up illegal dumpsites in Jefferson, Drew, Ashley, and Lincoln counties. During 2001, the volunteer trash clean-ups has yielded over one hundred tons of trash that has been delivered to landfills.

Water Quality Trends:

The BBA has contracted with Layer Biologics to sample fish communities at seven historical sampling locations. Species diversity, richness and biomass increased at all seven sites in Jefferson and Lincoln counties as compared to historical data collected in 1992, 1993, and 1994. This circumstantial evidence supports the hypothesis of improved conditions for aquatic life as a result of watershed restoration activities.

Spring River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Spring Watershed:

The Spring River watershed has many different uses. The watershed offers year-round recreational activities including hunting; fishing, hiking and camping, but canoeing and primary contact recreation activities are the most dominant recreational uses. Canoeing alone is the major attraction to Sharp County with people coming to float the river, fish for trout and muskie, and later visit the downtown area of Hardy. The Spring River is the most float stream in the State of Arkansas. Additional watershed uses include confined animal operations and pastureland for livestock, and silviculture. The Spring River is designated as an Extraordinary Resource Waterbody, and an Ecologically Sensitive Waterbody. Other designated uses include Primary and Secondary Contact Recreation, Domestic, Industrial and Agricultural Water Supply, and Ozark Highlands Ecoregion Fishery (ADEQ, 1998). In addition, there are several State and Federally listed "endangered" and/or "species of concern" species possibly occurring in the river; including the snuffbox and pink mucket mussels. (Harris, 1997). The river is also home to the Ozark Hellbender.

Arkansas' 2000 Water Quality Inventory Report (305(b)) identified all stream segments as supporting designated uses with the lower reaches occasionally exceeding turbidity standards. The South Fork of the Spring River, which in the past has contributed high bacteria and excessive turbidity to the Spring River, did not demonstrate these excessive values over the past four years (ADEQ 2000).

Nonpoint Source Pollution Management Issues:

Potential sources of nonpoint source pollution in the Spring River watershed are:

- Agriculture activities
- Unpaved roads and ditches
- Silviculture activities
- Stream bank erosion

Summary of Management Activities

Watershed Restoration Action Strategy: At this time no WRAS plan has been written.

A summary of projects currently being implemented in the Spring River Watershed or been completed in the watershed are given below:

Watershed Assessment:

Agriculture:

ASWCC Water Quality Technician Program: The Fulton County Conservation District employs a Water Quality Technician and a Grassland Specialist for developing plans using the alternative watering project.

Section 319(h), FY 95 (Spring River Pasture Improvement Project): This completed project was to prepare 260 farm plans and 185 follow up visits for farmers in the South Fork of the Spring River Watershed.

Section 319(h), FY 01 (Alternative Cattle Watering Methods): The goal is to maintain or restore all designated uses of the Upper Strawberry River Watershed-Strawberry River; Lower Norfork Dam- Bennet River; Hyatt Creek & Mid Spring River-English Creek, Myatt Creek; Southfork Spring River Watershed-Spring River; Town Creek-Spring River Watersheds. The project objective is to demonstrate alternative watering methods for cattle other than direct access to streams. This will allow for establishment of riparian buffers and fencing along stream corridors.

Streambank Erosion:

Riparian Zone Tax Credit Program: The ASWCC offers tax credits for landowners willing to restore damaged or degraded riparian zones. Credits may be up to \$5,000 per year for ten consecutive years up to the cost of the project.

Spring River Watershed Annual Nonpoint Source Pollution Management Report

Section 319(h), FY 98 (Demonstration Streambank Stabilization Project): This partially completed project help fund the demonstration of bioengineering methods used for streambank stabilization. A total of 4,052 linear feet of streambank have been protected using cedar tree revetments, retards, and riffles.



Silviculture:

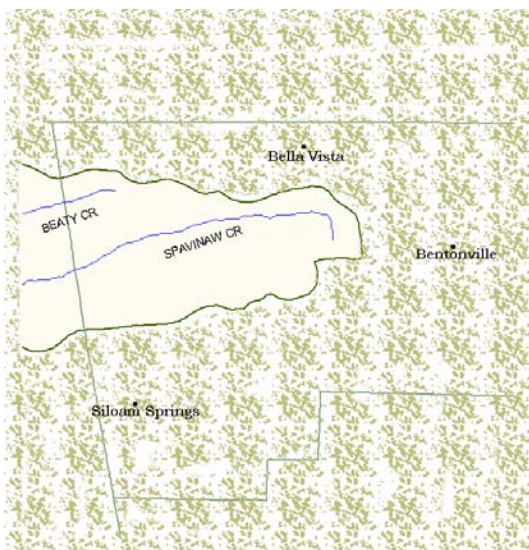
There is no project aimed specifically at the Spring River watershed for silviculture. However, the landowners in the Spring River Watershed are invited to attend the workshops for the Strawberry River.

Section 319(h), FY 98, Project 1500 (Strawberry River Forestry Project): This project will be an Information / Education program for forestland owners concerning forestry BMPs and use of professional foresters. The goals of the project are to encourage use of professional foresters by private forestland owners in planning harvests and improve the implementation rate of voluntary forestry BMPs. Four workshops have been held in the Strawberry River Watershed with 250 landowners attending. Two issues of the newsletter have been mailed to 5,183 landowners. Two more additional workshops are planned for the watershed in the next year.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Spring River watershed over time. ADEQ 2000 305(b) reports that there are “The long-term trend data for the lower Spring River station do not show significant upward trends in turbidity and TSS”. However, phosphate trends are lowest in the upper reaches and nitrates are highest in the upper reaches.

Lake Eucha/Spavinaw Creek Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Lake Eucha/Spavinaw Creek Watershed:

The waters within this watershed have been designated as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. The planning segment, which includes the Spavinaw Creek, Honey Creek, and Little Sugar Creek as well as the Illinois Watershed, contains 203.7 stream miles. Ten permanent monitoring stations and several temporary stations in this segment were utilized to assess 138.4 stream miles. An additional 32.3 stream miles were evaluated. Nonpoint source impacts affecting waters in this segment are primarily from pastureland that is also used for application of poultry waste products. In addition, in-stream gravel removal is destabilizing the streambed and causing excessive bank erosion. Road construction and maintenance is also contributing to significant siltation problems. (2000 Water Quality Inventory Report)

Spavinaw Creek is the primary tributary that provides water for Lake Eucha and Lake Spavinaw. Lake Spavinaw provides the primary source of drinking water for the city of Tulsa in Oklahoma. The Spavinaw watershed has been identified as a priority watershed in Benton County because of the impacts of agriculture on the quality of water for drinking and/or recreational purposes in both Arkansas and Oklahoma.

Nonpoint Source Pollution Management Issues:

Arkansas' Nonpoint Source Pollution Management Program for 1998 – 2002 lists the following as potential sources of pollution in the watershed as:

- Confined Animal Management
- Streambank Erosion
- Urban Runoff
- Rural Roads
- Resource Extraction
- Construction

Summary of Management Activities

A summary of projects currently being implemented in the Spavinaw Creek watershed is given below:

Confined Animal Management: Since 1997, much progress has been made in planning and implementing water quality projects in the Spavinaw Creek watershed. As an example, one particular poultry company has 213 contract growers in the watershed. 191 of these contract growers now have nutrient management plans for their farm. Close to half of these have been planned since 1999 and would meet the criteria of Comprehensive Nutrient Management Plans. Continued effort is needed to assure complete implementation of these plans and to update farms with the older plans. The ASWCC and USDA have targeted financial assistance projects to help with implementation.

The Benton County Conservation District has been conducting targeted water quality projects in the Spavinaw Creek watershed since 1997. In addition, the Spavinaw Creek has also been targeted for a special EQIP project since 1998. Projects that are being implemented include:

Section 319(h) Project 98-1300 Lake Eucha Watershed Project: This project is a cooperative effort with the Oklahoma Conservation Commission to implement animal waste and grassland management practices throughout the Lake Eucha watershed in Arkansas and Oklahoma. So far the Conservation district has completed 29 animal waste management plans, revised 7 old plans, completed 15 farm conservation plans, and made numerous follow

**Lake Eucha/Spavinaw Creek Watershed
Annual Nonpoint Source Pollution Management Report**

up visits. Several presentations have also been given to local groups about the project.

Section 319(h) Project 01-2000 Spavinaw Creek Cost share Project: The Benton County Conservation District will work with agricultural producers in the Eucha\Spavinaw watershed to

develop Comprehensive Nutrient Management Plans (CNMPs) and to implement on farm BMPs according to those plans. The Conservation District is contacting local poultry integrators for assistance in determining which producers most need to be targeted for CNMPs and BMP implementation.

A summary of implementation that has resulted from EQIP and Beaty creek Cost Share Programs is given below:

	512 Pasture Planting (acres)	614 Tanks	Riparian Area Management (linear feet)	382 Fencing (linear feet)	590 Nutrient management (acres)	528A Prescribed Grazing (acres)	313Waste Storage Structures
1998 EQIP	211	14	0	2,750	1,585	19	12
1999 EQIP	0	0	0	0	1,441	0	5
2000 EQIP	0	0	0	0	2,036	0	9
2001 EQIP	0	0	0	0	737	1,282	3
Beaty Creek 319h	389	11	29	17,900	0	0	3
Total	600	25	29	20,650	5,799	1,301	32

Additional acreage has been implemented without the assistance of the cost share program.

Resource Extraction: The mining division of the Arkansas Department of Environmental Quality, Regulation 15, now regulates Resource extraction from surface waters.

Construction: Phase I of the NPDES stormwater program requires construction sites of five acres or greater to implement an erosion/sediment control management plan. The Arkansas Department of Environmental Quality Permits Section administers this program.

Water Quality Data

	Total P mg/l	N mg/l	BOD mg/l	Turbidity NTU	TSS mg/l
1992	.12	2.61	.62	2.41	3.25
1994	.17	3.00	1.41	2.65	2.81
1996	.20	3.13	1.10	2.37	5.90
1998	.32	4.01	.48	.99	1.56
2000	.28	3.94	.63	1.83	4.31

All data taken from published 305 b reports written by ADEQ.

L'Anguille River Watershed Annual Nonpoint Source Pollution Management Report

Summary of Water Quality in the L'Anguille Watershed:

The L'Anguille watershed is located in northeastern Arkansas. Portions of the watershed are in Craighead, Poinsett, Cross, St. Francis, Woodruff, and Lee Counties. Land use in the watershed is predominately agriculture cropland (60%). Rice, soybean, and wheat are the major crops grown. Forest covers approximately 22% of the watershed. Pasture, urban, and water comprising approximately 12% of the watershed.

A TMDL was developed for this watershed addressing turbidity in terms of Total Suspended Solids (TSS). Two critical times during the calendar year were noted: spring (February through April) and summer (July through October). The drainage of lowland areas by ditching and the channelization of streams contribute to high turbidity and silt loads carried into the streams from row crop agriculture activities. The TMDL states that existing NPS loads must be reduced by 40% in the spring and 38% during the summer.

Nonpoint Source Pollution Management Issues:

The Arkansas Soil and Water Conservation Commission, Nonpoint Source Section 319 selected projects in FY 01 to address turbidity within the watershed. Projects include 01-400 coordinated by Ducks Unlimited and 01-500 coordinated by the Cross County Conservation District.

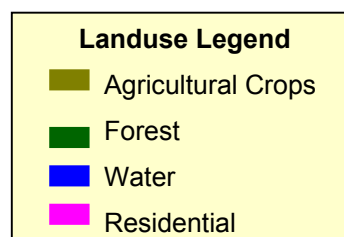
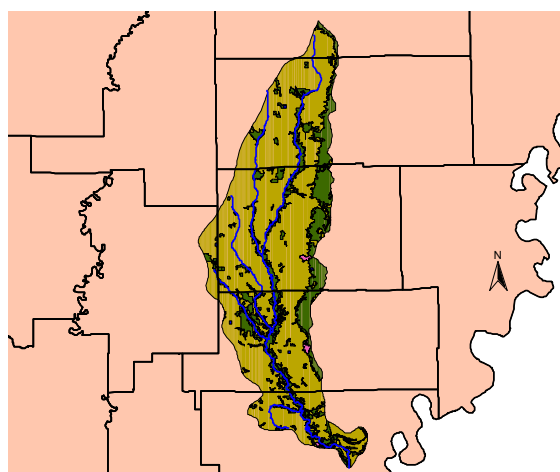
Summary of Management Activities

Agriculture:

Project 01-400 focuses on reducing sediment loss from row crop agriculture through the use of water control structures. These structures control the release of water (velocity and volume) from agricultural fields. This controlled release will reduce the TSS loads reaching the receiving stream. The project will assist with the installation of 375 water control structures on 75 farms.

Sediment and Pollution Reduction:

Project 01-500 is a cooperative effort between Cross, Craighead, Poinsett, St. Francis, and Lee Counties with coordination by the Cross County Conservation District. The focus of the project is to reduce sediment as well as other pollutants from reaching the L'Anguille River by the use of BMPs such as designed buffers, filter strips, and grade stabilization structures. This project will also incorporate on farm demonstrations, educational outreach, and a cost share element. Prioritized critical areas (approximately 6,000 acres) will be targeted initially for BMP implementation and cost share.



**Arkansas' Nonpoint Source Pollution Management
Program
2001 Annual Report
Categorical Implementation Program**

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2001 Annual Report

Categorical Implementation

Row Crop Agriculture

Arkansas farmers harvest more than 8 million acres annually. Significant crops include Cotton, Rice, Soybean, Hay, Wheat, Oats, Sorghum, Tomatoes, other field crops, Apples, Peaches, Grapes and Pecans. The total cash receipts for crops harvested in Arkansas is over two billion dollars. Arkansas is the number one producer of rice in the nation, with over 40% of the total produced.

The crop production area includes all or parts of 27 counties in Eastern Arkansas. Within this area, 55% of the streams assessed are identified as impaired. Sediment is generally the major cause of impairment. Pathogens are occasionally identified and nutrients are a minor source in the southern portion of the area.

Pesticides are not routinely found in Arkansas' waters in amounts above the EPA's action limits. However detection of pesticides is found in some wells at low levels.

Nonpoint Source Pollution Issues related to Row Crop Agriculture:

The primary issues related to row crop agriculture in Arkansas are sedimentation and turbidity of streams in Eastern Arkansas causing loss of support of the aquatic life use in some streams and detection of pesticides in some wells in the alluvial aquifer in Eastern Arkansas.

The Goals of the Row Crop Program are:

- Restore designated uses in streams where sediment from irrigated/non-irrigated row crop production is causing impairment.
- Identify the source of pesticide contamination of wells in the Alluvial Aquifer in Eastern Arkansas and develop management measures to address those sources.



Summary of Management Activity:

Public Awareness: The Cooperative Extension Service now conducts Farm-A-Syst programs across the state. This program is very useful in helping land owners/users to identify potential pollution problems on their operation.

Technical Assistance: Technical assistance to row crop farmers is provided by the Natural Resource Conservation Service through their District Operations program.

Demonstrations: Demonstrations currently being conducted include: *Tailwater Recovery* (Section 319(h), FY 96-600, (Poinsett County Conservation District), Section 319(h) FY 01-950 *St. Francis County No-till incentive project* (St. Francis County Conservation District).

Technology Transfer: The University of Arkansas Cooperative Extension Service (UA-CES) in partnership with ASWCC and NRCS transfer soil conservation technology directly to producers through county-based extension and Conservation District offices. The mode of delivery includes published materials (fact sheets, information bulletins, news articles, etc.), farm visits, demonstrations, field days, and other extension programming.

The UA-CES and ASWCC are cooperating on a section 319(h) project (FY 96-550) to develop educational materials for east Arkansas row crop producers. These materials focus on the utilization of Best Management Practices and similar conservation practices that protect water quality. The material is available in a bound hard copy version or accessible by a web site.

The UA-CES develops and distributes yearly crop budget estimates for conservation tillage for farm business planning. Fact sheets on the economics of conservation tillage for cotton and soil erosion control practices were published in the past year.

Several research and demonstration activities related to conservation tillage technology including Round-up Ready soybean and cotton demonstrations were conducted statewide. These activities are showcased to over 1000 people at field days sponsored by the University of Arkansas Division of Agriculture at their Research and Extension centers in Keiser, Stuttgart, and Rohwer.

2001 Annual Report Categorical Implementation Row Crop Agriculture

An effort has been initiated to establish baseline assessment on the implementation of conservation tillage on a county-by-county basis.

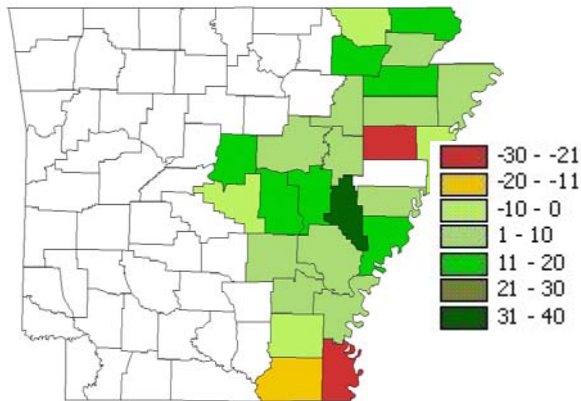
Financial Assistance: Assistance for row crop farmers is mostly provided through USDA programs including the Environmental Quality Incentive Program (EQIP), the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP). While the majority of EQIP funds in Arkansas are allocated to specific priority areas, Statewide \$455,000 was allocated for water quality. Although a significant increases from 2000 it is not enough to meet all of the financial needs of row crop farmers wishing to implement Conservation Practices to protect water quality. Additional funds were allocated for soil quality and wildlife enhancement. These concerns, while are not directly water quality issues, do have benefits to the Nonpoint Source Program.

construction BMPs and well abandonment at two additional sites in eastern Arkansas.

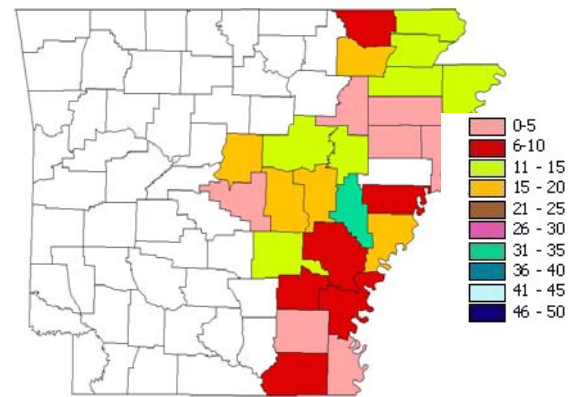
Training / Technology Transfer: Using results from the demonstrations described above, the ASWCC and the CES are conducting training programs for professional pesticide applicators, well contractors and farmers in proper handling of pesticides. All pesticide applicators in Arkansas are required to attend training and receive certification from the CES prior to application.

Enforcement: The State Plant Board is responsible for enforcement of pesticide regulations in Arkansas.

**Conservation Tillage by County
Percent Change, 1989-2001**



**Conservation Tillage by County
2000, Percent of Cropland**



Assessment: Analysis for pesticides in surface water is conducted by the Arkansas Department of pollution Control and Ecology as a component of their ambient monitoring program. Please see the 2000 Water Quality Inventory Report for a complete description of the sampling program.

Demonstrations: (Section 319(h), FY 97, Project 500) The Cooperative Extension Service demonstrated the proper use of facilities for pesticide mixing and handling. One facility for commercial pesticide applicators the other an on-farm scale demonstration. This project was completed in the summer of 2001 with approximately 120 person attending the demonstrations. The ASWCC (section 319h), FY 97, project 400) is demonstrating proper well

2001 Annual Report Categorical Implementation Silviculture

Forests cover 18.4 million acres (55.3%) of the land area in Arkansas. Of this total area, 98% is classified as timberland, land producing a harvestable crop of trees. According to the Forest Survey, conducted by the USFS for 1998 to 1995, roughly 3% of this forestland is harvested annually. Even though it covers such a vast area, silviculture is identified as only a minor source of Nonpoint Source Pollution. Out of 4,112 miles of stream identified in the 1997 Nonpoint Source Assessment as impaired, Silviculture was identified as a minor source of impairment to 218 miles. Clearly, the timber industry is to be commended for their efforts to prevent pollution.

Nonpoint Source Pollution Issues related to Silviculture:

Pollutants typically associated with forestry practices are sediment, nutrients, temperature increases, pesticides and pathogens. In Arkansas, sediment is the only pollutant related to forestry that has been significant. Management measures to prevent these pollutants from reaching our streams are: erosion control, protection of stream banks, riparian zones and wetlands, runoff/flow management, prescribed fire management, proper equipment operation and revegetation management. The American Forest and Paper Association has endorsed these management measures through its "Sustainable Forest Initiative". All forest managers, loggers, and timber producers are encouraged to implement Best Management Practices on each harvest site.

The goals of the Silviculture program are:

By 2002, achieve a biennial statewide compliance rating of 90% or greater of implementation of needed BMPs.

Establish the effectiveness of the BMPs in protecting waters from sedimentation

*Review and upgrade the NPS Management Program for Silviculture to more completely achieve the objectives *** and to recruit a new staff member to manage the expanded Program.*

Summary of Management Activity:

Assessment: The AFC has completed its second BMP implementation survey. The results are given below¹.

Over all BMP implementation rate is 80%.

BMP Implementation Rate by Region:

Ozarks 77%, Ouachita 77%,
Southwest, 80%, Delta 85%.

BMP Implementation by Category of Ownership:

Private Non-industrial Forest Landowners 75%
USFS 96% Industrial 87% State 82%.

Road construction and maintenance and harvesting were the two areas needing the most attention.

A third BMP implementation survey will be conducted starting in October 2000.

Training: Forestry BMP Implementation and Effectiveness Monitoring (Section 319(h), FY 98, Project 1100). The AFC is conducting a minimum of 60 meetings, workshops and demonstrations for landowners, foresters, and/or loggers on BMP planning and implementation.

Technical Assistance: The AFC, through its district offices prepares forest management plans for interested landowners.

Demonstrations: Forestry BMP Implementation and Effectiveness Monitoring (Section 319(h), FY 98, Project 1100). The AFC will be conducting a minimum of eight BMP demonstration sites displaying a number of BMPs at each site. These demonstration sites are located to be convenient with BMP training sessions. Practices demonstrated include SMZs, waterbars, wing ditches, stream-crossing techniques, skid trails, and log landing treatments.

Technology Transfer: The AFC has produced the revised Handbook titled "Best Management Practice Guidelines for Silviculture", which is

¹ Eagle, Dennis; Arkansas Voluntary Forestry Best Management Practices, Implementation Report; Arkansas Forestry Commission; 2000

**2001 Annual Report
Categorical Implementation
Silviculture**

now ready for printing. The Handbook will be distributed to foresters, loggers, and landowners as a technology transfer program.

Program Upgrade: Silvicultural Best Management Practices for Streamside Management Zones in Arkansas (Section 319(h), FY 99, Project 1000). The AFC has developed one task for streamside management zones for inclusion in the BMP handbook. Upon the completion of the task and restructuring the project, the project it is now considered complete.

Financial Assistance: Forest Site Preparation (NRCS Practice 490) and Forest Stand

Improvements (Practice 666) are eligible for EQIP payments.

Partnership Development: The AFC has a very good working relationship with the American Timber and Paper Association (ATPA) in Arkansas. Programs delivered by the AFC for water quality are most often cooperative efforts with the ATPA

Significant Accomplishments:

- 2,313 Foresters, loggers or landowners attended BMP training sessions.
- The AFC District Offices prepared 1,242 Forest Management Plans on 71,196 acres.
- Arkansas Foresters achieved a BMP compliance rating of 80%.

**2001 Annual Report
Categorical Implementation
Construction and Urban**

Road construction was identified by the 1996 Water Quality Inventory Report as causing major impacts on 147.3 miles and minor impacts on 58.7 stream miles. Other construction is potentially causing similar impacts through no impact is identified in the report.

**Nonpoint Source Pollution Issues related to
Construction**

The pollutant primarily associated with the road construction/maintenance is sediment. The principle source of this sediment is erosion from disturbed land areas during construction activities.

Summary of Management Activity:

The Arkansas Highway and Transportation Department is responsible for implementation of

erosion and sediment control practice on highway construction. Standard for these practices are included in the department's standard specification and manuals. Erosion and sediment control are incorporated into standard bid documents for highway contracts.

Construction sites other than highways and containing more than one acre are regulated by the Arkansas Department of Environmental Quality's General Permit No. ARR10A.

The ASWCC is cooperating with the Civil Engineering Department at the University of Arkansas (Section 319(h) FY 2001, Project 700) to conduct demonstration of construction BMPs and workshops for Engineers, Contractors and others concerning erosion and sediment control for construction sites.

Urban

Summary of Management Activity:

Urban runoff is not identified as impairing any of the States waterbodies in either Arkansas' 1991 Nonpoint Source Assessment Report or Arkansas' 1996 Water Quality Inventory Report (305(b)). However, storm water runoff from municipalities can cause short-term impairments to receiving streams. Continuous short-term storm events and extensive long-term storm events can cause partial and/or non-support of designated uses by impairing the aquatic life use.

**Nonpoint Source Issues related to
Urban Runoff**

Increased runoff from disturbed land surfaces that carry sediment and suspended solid loads to streams is the greatest threat to designated water uses from urban areas. In addition, petroleum products, solids materials, toxic materials, nutrients and metals may all be produced during construction activities and runoff from parking lots, homesteads, etc., during storm events.

The Washington County Cooperative Extension Service has conducted an Urban Nonpoint Source Project in the City of Fayetteville (Section 319(h), FY 00, Project 400). The goal of this project is to create community awareness of urban non-point source pollution potential impacts through public education and demonstration in Fayetteville and document successes for use in other urban communities.

The City of Rogers is conducting an Urban Watershed Management project (Section 319(h), FY 99, Project 1100). This project concentrates on assessment of Urban impacts on Osage Creek and Prairie Creek during the first phase.

The ADEQ is conducting an assessment of the Rock Creek (Section 319(h), FY 00, Project 1100) in Little Rock as a first step in development of an Urban Watershed Project.

2001 Annual Report Categorical Implementation Resource Extraction

Resource Extraction is identified in the State's Nonpoint Source Assessment Report as the likely source of major impairment to 210.9 miles of streams, and the likely source of minor impairment to 112.3 miles of streams in the state. Uncontrolled runoff from abandoned mine sites and the practice of in stream gravel mining has been identified as possible sources of water quality impairment.

Nonpoint Source Pollution Issues related to Construction

The pollutants most often cited as causing water quality impairment under this subcategory are sediment, pH, inorganics and bacteria. Pollutants may come from the following sources: a) soil erosion, b) surface water runoff or c) seepage from mines entering streams or groundwater from surface discharge or subsurface flow.

There are two primary non-point source problem areas for the resource extraction category: a) erosion / sediment control and b) water management.

Summary of Management Activity:

The Arkansas Department of Environmental Quality's (ADEQ) Regulation # 15, "The Arkansas Open-Cut Mining and Land Reclamation Code, effective May 30, 2000" cover surface mining in Arkansas.

Conservation Practices for Reclaiming Surface Mines in Arkansas Handbook (Section 319(h), FY 98, Project 500): The ADEQ has prepared a handbook on BMPs for surface mining. The handbook is in the draft review stage and should be completed by mid-2001. The Mining Division at ADEQ will use this handbook in training sessions for surface mine operators.

2001 Annual Report
Categorical Implementation
Land Disposal (On-Site Wastewater Disposal)

Land disposal of domestic waste is not currently identified in the Arkansas Nonpoint Source Assessment Report or the Water Quality Inventory Report as the likely source of impairment to any stream or waters of the State. Rules and regulations of the Arkansas Health Department (ADH) cover this category. The ADH reorganized in 2000 – 2001 to a regional concept to address specific regional concerns and to promote involvement from the stakeholders within regions. Each region consists of management team composed of colleagues from all programs in which ADH administers with in that region. Each management team is further subdivided into subcommittees that deal and emphasize specific stakeholder concerns.

**Nonpoint Source Pollution Issues related to
Land Disposal**

The main issue associated with land disposal of domestic wastewater is pathogen contamination of waterways.

Summary of Management Activity:

In accordance with the Rules and Regulations pertaining to Sewage Disposal Systems, Designated Representatives and Installers, all on-site wastewater disposal system installation or modifications in Arkansas must be designed by a Designated Representative of the Arkansas Department of Health and installed by a licensed installer.

A Section 319(h) Project 98-200 *Piney Creeks* (Johnson, Newton and Pope County Conservation Districts) This project was completed in December of 2001. A portion of the project was to assess the need for conservation practices relative to on-site sewage disposal systems. A random sampling of thirty-five individual sewage systems were selected. It was determined that no conservation practices were needed for all systems assessed.

A Section 319(h) Project 01-1300 (University of Arkansas – Fayetteville) *A watershed approach to managing on-site wastewater systems* is utilizing a unique data set build over a 30 year time period. This data has been and continues to be collected to assess the impact of on-site wastewater systems to ground and surface waters within a watershed. The data has been collected within a residential community that currently has over 300 living structures. Information gained from this project can be utilized to direct onsite wastewater development and possible usage within other watersheds.

**2001 Annual Report
Categorical Implementation
Hydrologic Modification**

**Nonpoint Source Pollution Issues related to
Hydrologic Modification**

In Arkansas, the primary concern related to hydrologic / habitat modification is sedimentation and other physical changes to a stream as the result of loss of riparian zone vegetation and the resulting erosion. Hydrologic / Habitat Modification is generally associated with agricultural operations, silviculture management, urban growth or resource extraction. Sedimentation and loss of habitat are the main problems associated with this category. Eroding streambanks and loss of riparian zone vegetation are the main causes of the problems. State and Federal agencies with resource extraction responsibilities will conduct technical assistance, technology transfer and demonstration projects related to streambank restoration and agricultural management. Streambank problems associated with gravel extraction will be handled by the ADEQ. Hydrologic modification problems associated with highway construction will be the responsibility of the Arkansas Highway and Transportation Department.

Summary of Management Activity:

Project 400 FY98 CWA Section 319(h), Demonstration of Streambank Restoration: The ASWCC is cooperating with the Benton, Boone, Madison and Fulton County Conservation Districts to demonstrate streambank stabilization and restoration practices. One demonstration streambank is being restored in each district.

Project 800 FY99 CWA Section 319(h), Demonstration of Streambank Restoration: The ASWCC is conducting a streambank restoration workshop at a demonstration site on the Big Piney Creek and classroom workshops in Fayetteville, Monticello, Brinkley, Mountain Home and Hot Springs.

Water Quality Trends

Completed restoration to date: Fulton County 3,100 linear feet, Madison County 1,800 linear feet, and Boone County 2,200 linear feet. The Arkansas Game and Fish Commission's Private Lands Program have completed additional restoration projects around the state.

Types of Restoration

Cedar Tree Revetment - This type of stream bank stabilization is perhaps the cheapest from a landowners point of view but also the most labor intensive. It involves placing fresh cut cedar trees at the toe of the stream bank after the bank has been sloped to a 2:1 and covered with coconut fiber. This practice only works in streams with low bank full velocities and where



the highest velocities are not against the stream bank.

South Fork of the Spring River – During Construction



South Fork of the Spring River – 1 year later
(notice log in river)

Bendway Weir – This method is probably the most cost effective from a project managers point of view. It has little hand labor involvement and can be used alone or in conjunction with other methods. It's primary function is to move the velocity off of the stream bank and into the center of the channel. The stream bank may or may not be sloped using this method.

**2001 Annual Report
Categorical Implementation
Hydrologic Modification**



War Eagle Creek – Bendway Weir with Gabions



War Eagle Creek – 1 year after construction
(notice formation of gravel between weirs)

Other methods that have been used by ASWCC include rock riffles to reduce head cutting and rip rap.

Needs

Currently, most landowners wish to work on their streambank problems. However, cost sharing under current guidelines makes this next to impossible. Also, no agency has come forth and taken a lead role. Money needs to be made available for cost sharing with land owners. It isn't unusual for a restoration project to cost over \$60,000 to restore 1,000 linear feet of bank. Most surveys of streams show about 10% of the stream miles are raw eroding banks. But, when viewed at the cost for treating drinking water for sediment, the cost of fixing the problem at the source becomes feasible. The problem is convincing responsible parties for drinking water that it is feasible. It simply is easier to ask for more money to upgrade the treatment plant than to fix the source problem.

2001 Annual Report Categorical Implementation Pasture Management

Arkansas has roughly 6 million acres of pasture/hayland. These lands are mostly in the Ozark Highlands and Arkansas River Valley and to a lesser extent in the Boston and Ouachita Mountains and the Gulf Coastal Plain.

Nonpoint Source Pollution Issues related to Pasture Management:



“A well managed pasture serves as it’s own filter.” Edwards et.al. University of Arkansas

The pollutants most often cited as causing water quality impairment under this subcategory are bacteria, nutrients, sediment, minerals and other inorganic chemicals. Sedimentation is by far the most common water quality impairment associated with pasture management.

The 1992 NPS Assessment Report indicated pasture as the most likely source of impairment to 702.8 miles of stream. However, it is very difficult to separate pasture sediment from other sources such as rural roads or construction. It is likely more proper to say that pasture is a contributing factor to several hundred miles of stream impairment. More recent reports do not separate pasture from other categories of agriculture. The 1992 National Resource Inventory Report indicated that there were 771,000 acres of pasture in Arkansas with excessive erosion rates.

Summary of Management Activity:

Training: Annual Grassland Management Schools were conducted in nine locations in Arkansas by the Cooperative Extension Service.

The NRCS has established four grassland or grazing land specialist positions to provide grazing lands technical assistance to grassland owners and managers.

Technical Assistance: Grassland specialists and Water Quality Technicians are now employed in Sharp, Fulton and Izard counties to provide assistance to ranchers in the Strawberry River watershed in improving pasture and grazing practices. This has resulted in conservation plans being developed on 142 farms covering 19,872 acres in the Strawberry River. The Spring River has had requests for 13 tracts covering 3,104 acres.

Demonstrations: Demonstrations currently being conducted include:

The Sharp County Conservation District is developing a model farm in the Strawberry River watershed for use in demonstrations of pasture and grazing management practices.

Significant Accomplishments:

Over the past two years, the Arkansas Conservation Partnership (ASWCC, NRCS, CES, U of A Pine Bluff, Ar. Assoc. of Conservation Districts and Ar. Assoc. of Conservation District Employees) has accomplished the following:

- Provided technical assistance to livestock producers resulting in conservation management systems
- Trained landowners at Arkansas Grazing Management Schools
- Conducted pasture management demonstrations.

2001 Annual Report Categorical Implementation Confined Animal Management

Confined animal production is a major industry in Arkansas. According to the 1998 Annual Bulletin from the Arkansas Agricultural Statistics Service, Arkansas is second only to Georgia in production of Broilers in the United States. Arkansas also ranks high in the nation in production of Turkeys and Catfish. We have significant numbers of Hogs and Dairy Cattle as well.

In Arkansas, livestock producers that production facilities with water (liquid waste management systems) are required to obtain a permit from the Department of Environmental Quality (ADEQ). This permit sets standards for waste management on the farm. Producers that manage their manure in a dry state are encouraged to voluntarily implement conservation practices that protect local waters from contaminated runoff. The confined animal management program is a cooperative effort of the farmers, the livestock industry, ASWCC, NRCS, The Extension Service, ADEQ and local Conservation Districts.

In 2000, the EPA/NRCS Unified Strategy for Animal Feeding Operations set a national goal that all operations implement a Comprehensive Nutrient Management Plan (CNMP) by the year 2000. Arkansas livestock industry has asked that we meet that goal in five years.

Nonpoint Source Pollution Issues related to Confined Animal Management:

The pollutants most often cited as causing water quality impairment under this subcategory are nutrients and bacteria. Nutrient enrichment of streams, particularly phosphorus, is often cited as the cause of accelerated eutrophication of lakes and reservoirs in the State. The ADEQ has listed several streams in Western and Northern Arkansas as "Waters of Concern" because of elevated nutrient loads carried by the waters in those streams.

Management measures to prevent pollution from confined animal facilities include proper manure handling and storage, soil testing, waste utilization, nutrient management, timing of manure land application, filter strips and buffers. In some watersheds, farmers are encouraged to find alternate uses of manure in order to move the material out of the watershed.

Summary of Management Activity:

Phosphorus Index: A major change in the Comprehensive Nutrient Management Plan from earlier plans is that plans must also manage phosphorus. Arkansas has taken the Phosphorus Index approach. Our Phosphorus Index was developed by a joint effort of the NRCS, ASWCC, CES, University of Arkansas and the ADEQ. The Phosphorus Index is a risk assessment tool. A value is derived from the soil test phosphorus, the available phosphorus in the current application, hydrology of the soils and implemented best management practices. Using this index, a farmer and the water quality technician can evaluate the potential for loss of phosphorus from the farm and potential pollution of local streams. Plans strive for a low to medium risk.

Training: Manure management training is provided to poultry producers in Arkansas through a cooperative program of the Cooperative Extension Service, ASWCC, NRCS and the Poultry Integrators. Training includes discussion of the water quality issues related to poultry production, proper manure handling and application techniques and potential alternative uses. ADEQ Liquid Animal Waste Permit holders are required to attend annual training conducted by the Cooperative Extension Service with assistance from the NRCS and the ADEQ.

Technical Assistance: Manure management plans are provided for poultry producers through the local Conservation District. Plans may be prepared by a District "Water Quality Technician", or by the NRCS "District Conservationist", or his staff. There are currently 35 Water Quality Technicians or Grassland Specialists working in local Conservation District offices in targeted areas. Roughly 3/4ths. of the poultry growers in the state now have a manure management plan. However, with the new standards for Comprehensive Nutrient Management Plans, virtually all of these will have to be updated. The new plans will use the Phosphorus Index to develop application rates and BMPs. During the last year, 840 plans meeting these new standards have been prepared for poultry farmers.

Land Application of Accumulated Solids from Liquid Animal Waste Systems: FY 97 319(h)-Project 700: ADEQ and local Conservation

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Districts provide assistance to swine producers with sampling of liquid waste storage ponds and development of clean-out plans addressing nutrient build-up issues.

Demonstrations: Demonstrations currently being conducted include:

- Pasture Renovation to Reduce Phosphorus and Nitrogen Runoff from Fields Fertilized with Animal Manure (Section 319(h), FY 99 Project 600) demonstrates use of a pasture aerator to increase infiltration and water holding capacity of pasture thereby reducing runoff and loss of phosphorus in runoff.

Technology Transfer: An Evaluation of the Effectiveness of "Dairy Manure Management Alternatives" In Minimizing the Impact of Dry Waste Dairy Operations: (Section 319(h), FY 97, Project 700). The ADEQ is conducting an assessment of potential water quality impacts from dairies and demonstration of improved conservation practices.

Swine Waste Demonstration and Training Project: (Section 319(h) FY 98, Project 900) The U of A is Constructing, as part of their new swine facility, a waste training facility, develops and will implement training programs for swine producers and employees in waste management best management practices

Land Application of Accumulated Solids from Liquid Animal Waste Systems: FY 97 319(h)-Project 700: This project also provides technology transfer materials to swine producers concerning waste lagoon solids management

Financial Assistance: ASWCC, Title X Agricultural Cost Share Program: The ASWCC provides financial assistance to agricultural producers in targeted watersheds through its Title X program. Assistance may be provided where a Watershed Restoration Action Strategy identifies the need and prioritizes practices for implementation.

ASWCC, Clean Water Act SRF Loans: The ASWCC has established a low cost loan program for implementation of agricultural Best Management Practices through its State Revolving Fund. Loans are available in Benton, Carroll, Madison and Washington County.

EQIP: The following EQIP Priority Areas are targeted primarily at Animal Feeding Operations:

Priority Area or State Resource Concern	2000 Allocation.
Little Missouri	\$ 49,194
Spavinaw/Eucha Watershed	\$ 288,159
N. Benton Co	\$ 254,940
Upper White River	\$ 477,517
Beaver Lake/War Eagle	\$ 143,218
Upper Little Red River	\$ 424,505
Cadron Creek/Point Remove	\$ 324,999
Poteau River & Tribs	\$ 139,586
Illinois River	\$ 608,579
Little River	\$ 254,002
South Central Nutrient Management Project	\$ 80,550

Partnership Development: Arkansas has been participating regularly with the Tri-State Poultry Dialogue. This dialogue is composed of poultry companies from Arkansas, Kansas and Missouri, State and Federal agencies and Universities from those same states. Meetings are held approximately semi-annually to discuss current environmental issues in the area.

Significant Accomplishments:

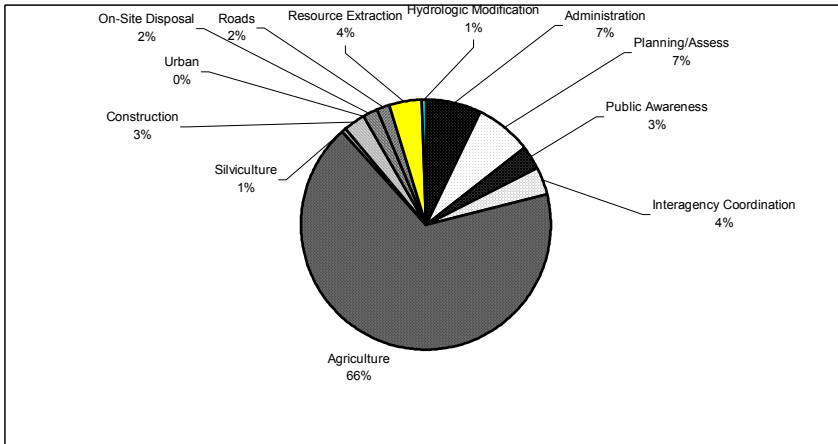
- Trained all liquid animal waste permit holders in waste management and water quality protection techniques.
- Trained 1555 poultry growers in water quality protection.
- Completed 840 poultry manure management plans meeting criteria for Comprehensive Nutrient Management Plans (CNMPs).
- Trained Conservation District Water Quality Technicians, NRCS personnel, and State Agency personnel in development of CNMPs.
- Secured funding from the Arkansas State Legislature for Conservation District Water Quality Technicians
- Participated in the Tri State and National
- Poultry Dialogues
- Developed Arkansas' Phosphorus Index

2000 Annual Report Utilization of Funds

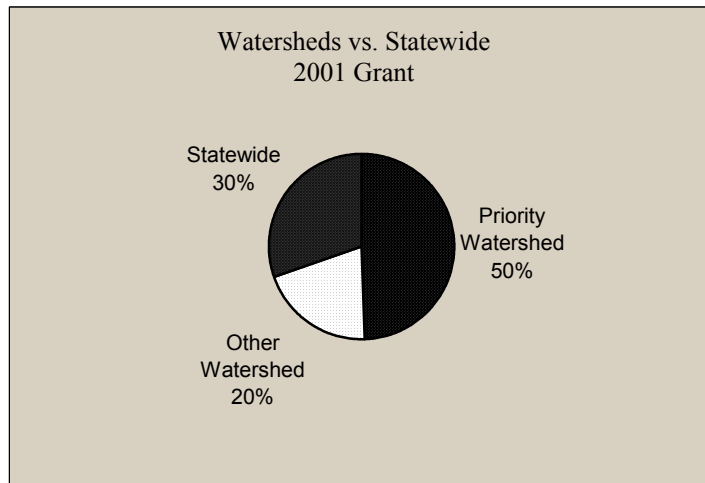
Total Grant Budget vs. Expenditure, 1993 through 2001 (Through Dec. 2001)

Grant #	Fiscal Year	Federal		Non-Federal		Total	
		Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
999610301	1993	\$ 929,300.00	\$ 929,300.00	\$ 619,533.00	\$646,051.33	\$ 1,548,833.00	\$1,575,351.33
999610302	1994	\$ 782,897.00	\$733,808.35	\$ 521,932.00	\$495,667.88	\$ 1,304,829.00	\$1,229,476.23
999610303	1995	\$ 2,091,553.00	\$2,027,435.93	\$ 1,412,666.00	\$1,407,443.16	\$ 3,504,219.00	\$3,434,879.09
999610304	1996	\$ 1,957,400.00	\$1,682,977.50	\$ 1,304,934.00	\$1,058,559.37	\$ 3,262,334.00	\$2,741,536.87
999610305	1997	\$ 1,952,400.00	\$1,681,463.97	\$ 1,301,600.00	\$1,170,999.42	\$ 3,254,000.00	\$2,852,463.39
999610306	1998	\$ 2,080,300.00	\$1,250,652.02	\$ 1,386,866.00	\$964,479.80	\$ 3,467,166.00	\$2,215,131.82
999610307	1999	\$ 3,920,400.00	\$1,676,963.45	\$ 2,613,600.00	\$1,433,973.86	\$ 6,534,000.00	\$3,110,937.31
999610308	2000	\$ 3,884,200.00	\$1,255,600.19	\$ 2,589,467.00	\$693,740.74	\$ 6,473,667.00	\$1,949,340.93
999610309	2001	\$ 4,614,992.00	\$352,560.47	\$ 3,094,621.00	\$453,904.30	\$ 7,709,713.00	\$806,464.77
Total		\$22,213,442.00	\$11,590,761.88	\$14,845,219.00	\$8,324,819.86	\$37,058,761.00	\$19,915,581.74

Utilization of Funds by Category FY 2001 Grant



Watersheds vs. Statewide
2001 Grant



SECTION 9

**ARKANSAS SOIL & WATER CONSERVATION COMMISSION
FISCAL YEAR 2001
ANNUAL 319 NONPOINT SOURCE PROGRAM REPORT
AUTHORIZING SIGNATURE OF STATE LEAD AGENCY**

A handwritten signature in black ink, appearing to read "J. Randy Young". The signature is stylized with a large initial "J" and a long horizontal stroke.

**J. Randy Young, P.E.
Executive Director**

1/29/02

Date