
Coordinated Watershed Restoration and Protection Strategy for Oklahoma's Impaired Scenic Rivers

(per Senate Bill 972, 2nd Session of the 48th Legislature, 2002)



Coordinated and Prepared By:

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EXECUTIVE SUMMARY

More has been done in the past twelve months to set the stage for massive pollution reductions in Oklahoma's Scenic River watersheds than in any other year since the Oklahoma Legislature passed the *Scenic Rivers Act* (82 O.S. 1451 through 1471) in 1970. Certainly, great milestones have been achieved since 1970, namely Tahlequah's significant reduction in phosphorus loading to the Illinois River in 1992 and the Oklahoma Scenic Rivers Commission's completion of *The Illinois River Management Plan* in 1998, not to mention the Oklahoma Legislature's passage of the *Registered Poultry Feeding Operation Act* in 1998 (2 O.S. 10-9). But it was the Oklahoma Water Resources Board's promulgation of a numeric phosphorus criterion in *Oklahoma's Water Quality Standards* in 2002 that initiated momentous actions to restore and protect Oklahoma's most treasured water resources – the Scenic Rivers. Despite opposition to this critical criterion, unprecedented cooperation among all of the state environmental agencies, and a genuine desire by Oklahoma's Governor and Legislature to take more significant steps to protect Oklahoma's waters, led to the criterion's adoption in May 2002.

Over the years, few watersheds in Oklahoma have been studied as extensively as the Illinois River watershed, which is unquestionably the most renowned of Oklahoma's Scenic Rivers. In the scientific community, it is well accepted that municipal discharges and nutrient runoff from poultry operations in both Northeast Oklahoma and Northwest Arkansas are the principal causes of impairment in the Illinois River watershed, which includes Flint Creek and the Barren Fork. While Oklahoma was requiring its municipal dischargers to meet stringent 1 mg/L phosphorus effluent limits and mandating that its poultry growers cease the over-application of poultry litter, the State of Arkansas failed to follow suit. Additionally, the poultry integrator companies that operate in these watersheds refused to assist their growers with the cost of properly disposing of surplus poultry litter.

Since the promulgation of the phosphorus criterion, Oklahoma and Arkansas officials have been actively engaged in negotiations in order to secure more substantial phosphorus control measures in both states, while at the same time avoiding litigation. Recently, Arkansas' largest municipal dischargers expressed their intent to meet the same 1 mg/L phosphorus effluent limit imposed on Oklahoma's dischargers. Additionally, the Arkansas Legislature is considering draft legislation to establish a poultry regulatory program similar to the one in Oklahoma. While several additional concerns still linger, not the least of which is a commitment from the poultry integrators to address poultry litter surpluses in the watersheds, progress has been made in the effort to reverse impairment of the Illinois River watershed and its Scenic River tributaries, the Barren Fork and Flint Creek.

EPA has indicated that approval of Oklahoma's phosphorus criterion is imminent and, once approved, Oklahoma will follow the customary Clean Water Act process, which includes the development of total maximum daily loads ("TMDL") designed to quantify and assign pollution reduction goals to the various state environmental agencies, as well as the sources that they regulate. Once developed, the TMDLs may dictate both permit modifications and revised efforts to combat nonpoint sources of pollution. Water quality monitoring will prove critical throughout this process not only to fine-tune pollution control efforts, but also to monitor progress towards pollution reduction goals. Monitoring also will be crucial to finding out more about other pollutants that may be causing impairment of Oklahoma's Scenic Rivers, as well as to gain a better understanding of the Lee/Little Lee Creek watershed.

INTRODUCTION

During the 2002 Session, the Oklahoma Legislature passed Senate Bill 972, which charged the Secretary of Environment with coordinating with the other state environmental agencies to develop a “watershed restoration and protection strategy for each impaired scenic river in this state.” In particular, the Strategy was to list “all permitted or registered water pollution sources,” in addition to describing the efforts of state environmental agencies to identify and mitigate pollutants causing impairment of these most treasured watersheds. Updated information is required in subsequent annual reports in order to check the progress of actions initiated by the state environmental agencies in their efforts to restore and protect Oklahoma’s Scenic Rivers. These annual reports will be coordinated and compiled by the Secretary of Environment and submitted to the Governor, President Pro Tempore of the Senate, and the Speaker of the House of Representatives beginning 31 January 2004.

Oklahoma’s Scenic Rivers

In 1970, the Oklahoma Legislature passed the “Scenic Rivers Act” (82 O.S. 1451-1471) in an effort to identify and preserve the unique characteristics and uses of the state’s most scenic streams. This same legislation identified four streams to be designated as “Scenic River Areas”: Flint Creek, Illinois River, Barren Fork Creek, and Upper Mountain Fork River. In 1975, the Legislature added Lee Creek and Little Lee Creek. The primary purpose of the Scenic Rivers Act, and the subsequent water quality standards regulations promulgated pursuant thereto, is to preserve the high quality of these outstanding resource waters.

The most recent water quality data collected by the Oklahoma Water Resources Board (“OWRB”) under its Beneficial Use Monitoring Program (“BUMP”) indicate that water quality is impaired in Flint Creek, Barren Fork Creek, and the Illinois River (all within the Illinois River watershed), as well as in the Upper Mountain Fork River (see Table 1). It is anticipated that these impairments will be reflected in the current revision to the State’s 303(d) list of impaired waters.

Table 1. Impaired Scenic Rivers based upon 2002 Beneficial Use Monitoring Program water quality data collections.

Scenic River Name	Segment ID	Impaired Use	Cause of Impairment
Flint Creek	OK121700060010	Primary Body Contact (recreation)	Pathogens (<i>enterococc</i>)
		Aesthetics	Phosphorus
Barren Fork	OK121700050010	Primary Body Contact (recreation)	Pathogens (<i>enterococc</i>)
		Aesthetics	Phosphorus
Illinois River	OK121700030010	Primary Body Contact (recreation)	Pathogens (<i>enterococc</i>)
		Aesthetics	Phosphorus

	OK121700030350	Cool Water Aquatic Community	Turbidity
		Primary Body Contact (recreation)	Pathogens (<i>enterococc</i>)
		Aesthetics	Phosphorus
Upper Mountain Fork	OK410210060010	Cool Water Aquatic Community	Metals (lead) pH Turbidity

Efforts to Abate Scenic River Impairment

Since the passage of Senate Bill 972, monumental strides have been made with regard to protecting and restoring Oklahoma invaluable Scenic Rivers, primarily due to the ***promulgation of a numeric phosphorus criterion*** in Oklahoma's Water Quality Standards ("OWQS"). The unprecedented cooperation and support of all state environmental agencies, coupled with the solid technical justification derived from extensive research, paved the way for OWRB adoption of a 0.037 mg/L phosphorus criterion to protect the state's nutrient-imperiled Scenic Rivers.

The passage of this criterion provided a critical regulatory tool for the State to use in halting further nutrient loading of its Scenic Rivers and, as such, was met with some opposition by those within the regulated community. Additionally, the State of Arkansas expressed its grave concern regarding the feasibility of the proposed criterion and vehemently opposed its passage due to the regulatory implications it would have on its municipalities and industries vis-à-vis a previous Supreme Court decision that held that downstream states' water quality standards could be imposed upon upstream states. Despite the opposition, the dire need to provide additional protections for Oklahoma's Scenic Rivers compelled the Governor and Legislature to accept the OWQS revisions, and they became effective on 1 July 2002.

Shortly after the Governor's approval of the new OWQS on 6 May 2002, state officials from ***Oklahoma and Arkansas began discussions*** regarding how to reach an agreement on necessary phosphorus reductions in both states while, at the same time, avoiding what could be costly and protracted litigation. The first official meeting was held between the two states on 6 June 2002, and several subsequent meetings were held in an effort to derive an amicable strategy for reducing phosphorus in the Scenic River watersheds. Throughout the negotiations, Oklahoma officials promised to never require more of Arkansas than what Oklahoma was willing to implement within its own borders.

As a result of these negotiations, the ***major municipalities*** in Arkansas announced that they intended to upgrade their treatment facilities in order to meet the same 1 mg/L effluent limit for phosphorus that is required of Oklahoma's municipal dischargers in the Scenic River watersheds. This intention is reflected in a 25 November 2002 letter from the Mayors of Fayetteville, Springdale, Rogers, Siloam Springs, and Bentonville (see ***Attachment A***). Also, the Arkansas Legislature is considering legislation that attempts to establish a ***poultry regulatory program*** similar to the one enacted by Oklahoma's Legislature in 1998 (via Senate Bill 1170). In addition to regulation of poultry litter, this proposed legislation seeks to regulate the land application of all other nutrients in vulnerable watersheds, including commercial

fertilizer. Recent news articles in Arkansas suggest that three bills may be introduced very soon (draft bill summaries are provided as **Attachment B**).

The aforementioned measures do not address all of the critical phosphorus sources in Arkansas. "Minor" dischargers in Arkansas have not been included in any of the public commitments made by Arkansas thus far. For its part, the Oklahoma Department of Environmental Quality ("ODEQ") has placed the City of Westville, Oklahoma under a compliance order to meet a 1 mg/L phosphorus discharge limit by 2004, even though Westville's discharge is classified as "minor". Additionally, all dischargers in Oklahoma are prohibited from increasing their phosphorus loading (i.e., total pounds of phosphorus discharged) into the Scenic Rivers, yet no similar public commitment has been made by Arkansas. Without such a commitment, Oklahoma cannot guarantee the long-term protection and restoration of its impaired Scenic Rivers.

Finally, no solution would be complete without a specific, binding commitment on the part of the poultry integrator companies that operate in Scenic River watersheds to remove the serious impact posed by surplus poultry litter generated at their company-owned and contract operations. As noted earlier, the Arkansas Legislature is considering legislation to regulate poultry operations and their land application practices. However, such regulations will only place additional burdens on contract poultry growers to find ways to get rid of surplus litter that cannot be safely land-applied onsite. Thus, it is imperative that the **poultry integrator companies provide avenues for the safe disposal of surplus litter** at their contracted facilities in both states in order to remove the threat of continued phosphorus pollution in Oklahoma's Scenic Rivers.

The OWRB submitted its OWQS to EPA on 1 November 2002, and EPA orally suggests that **imminent approval of the OWQS**, including the phosphorus criterion, is certain. Once the OWQS are approved by EPA, the State of Oklahoma will be in position to follow the customary Clean Water Act process and implement additional Scenic River protections, including the drafting of **total maximum daily loads ("TMDL")** for each pollutant causing impairment. This TMDL process will result in the "overall pollutant-specific load reduction" called for in *82 O.S. 2002, section 1457(B)(2)(a)*, which will serve as the target "to bring each impaired scenic river back into compliance with water quality standards." In order to make this TMDL process most effective, Oklahoma officials hope to reach an agreement with Arkansas in the coming months that involves their cooperation in developing and implementing a TMDL that encompasses the Arkansas-portion of the Scenic River watersheds.

The next step in the Clean Water Act process will be, where necessary, to **modify discharge permits** and regulatory procedures in both states in order to meet the pollution reduction goals identified in the TMDL. For example, both states have identified the need to work cooperatively on the development of a **uniform, water quality-based phosphorus index** to calculate nutrient application rates that are designed to meet TMDL goals. Both Arkansas and Oklahoma have agreed to assemble their leading soil and watershed scientists to complete this task sometime in 2003. This new index should then be used in both states to revise farm nutrient management plans such that land application rates are calculated based upon water quality risks in the Scenic Rivers.

Both the Arkansas Department of Environmental Quality (“ADEC”) and the ODEQ will **enforce the discharge permits** issued pursuant to the goals of the TMDL, and the Oklahoma Department of Agriculture, Food, & Forestry (“ODAFF”) has the authority to **ensure compliance with the revised nutrient management plans at registered poultry feeding operations in Oklahoma**. Should the Arkansas Legislature pass legislation to require compliance with nutrient management plans in Arkansas, then the Arkansas Soil & Water Conservation Commission and/or ADEC will assume similar regulatory authority in their state. Subsequent annual progress reports will provide updates on the progress of these activities.

In addition to regulatory efforts, projects designed to enlist voluntary cooperation from watershed landowners will be continued and/or intensified. Such projects are designed to provide government **cost-share assistance for landowners to install best management practices** (“BMPs”) that are designed to reduce the pollutants causing impairment. Significant Clean Water Act section 319(h), USDA Environmental Quality Incentive Program (“EQIP”), and/or State Cost-Share Program monies have been expended in both Arkansas and Oklahoma to reduce nutrient impacts on water quality, particularly in the Illinois River watershed. Oklahoma hopes to continue working with Arkansas on these essential nonpoint source pollution abatement projects in the future, including working with the Congressional delegations of both states to secure additional Federal funds, so that voluntary efforts to reduce Scenic River impairment are intensified. Such projects and programs are critical to the Clean Water Act process as they address pollution stemming from unregulated activities throughout the Scenic River watersheds.

Closing the loop on the Clean Water Act process involves **intensive water quality monitoring**, which will be critical to providing answers regarding the success of measures taken to reverse the impairment of Oklahoma’s Scenic Rivers. Additionally, monitoring will be vital to establishing water quality trends in the Scenic Rivers, as well as to identify whether or not other impairments exist, particularly in the Lee and Little Lee Creek watersheds where more data are needed. This same long-term monitoring will ascertain the need for new or revised water quality standards to more adequately protect the beneficial uses and antidegradation provisions assigned to the Scenic Rivers. Any shortcomings in regulatory or voluntary tools employed to reverse impairment will be identified through water quality monitoring, and modifications to those tools, including possible water quality standards revisions and TMDL modifications, will result.

Under its BUMP program, OWRB staff maintains several stations within the Illinois River, Lee Creek, and Upper Mountain Fork River watersheds (Table 2). All but two of the stations have been monitored since the program’s inception in November 1998. Caney Creek near Barber was added in 1999 because of its significant influence on Tenkiller Lake. Lee Creek was added in 2002 so that all of Oklahoma’s Scenic Rivers can be adequately monitored over the long-term. Although not included in Table 2, the Cherokee Nation Office of Environmental Services (“CNOES”) is also monitoring Little Lee Creek at several locations. CNOES and the OWRB are currently working towards a cooperative agreement to conduct joint monitoring in the Illinois River and Lee Creek watersheds. In addition, through cooperative agreements with the OWRB and the Oklahoma Scenic Rivers Commission (“OSRC”), the United States Geological Survey (“USGS”) maintains stream flow gauges in each watershed and conducts targeted water quality studies throughout the Illinois River watershed.

Table 2. BUMP monitoring stations located in the Illinois River, Lee Creek, and Upper Mountain Fork River watersheds.

Station ID	Station Name	County	Period of Record
AT197000	Barren Fork, SH 51, near Eldon	Cherokee	11/98-present
AT197360	Caney Creek, off SH 100, near Barber	Cherokee	9/99-present
AT196000	Flint Creek, US 412, near Kansas	Delaware	11/98-present
AT195500	Illinois River, US 59, near Watts	Adair	11/98-present
AT196500	Illinois River, US 62, near Tahlequah	Cherokee	11/98-present
AT249800	Lee Creek, SH 101, near Short	Sequoyah	1/03-present
AT338750	Mountain Fork River, SH 4, near Smithville	McCurtain	11/98-present
AT195865	Sager Creek, off US 412, near West Siloam Springs	Delaware	11/98-present

In order to build the momentum of the State's efforts to restore and protect Oklahoma's treasured Scenic Rivers, the support of the Oklahoma Legislature in providing adequate funding and resources is vital. Continued support of the BUMP program at its established funding level of \$1.2 million per year, in addition to continued support of the USGS monitoring program, is critical to the data needs inherent to this effort. Additional support is needed for providing State cost-share funds, as well as State match for Federal cost-share monies (e.g., EPA section 319 and NRCS EQIP), that are targeted to address problems in the Scenic River watersheds. Also, ODAFF continues to face budget shortfalls as it tries to regulate and enforce CAFO and poultry feeding operations in the Scenic River watersheds, with swine regulations costing \$278,272 and poultry regulations costing \$400,000 more than the fees derived from those industries in FY 2002 alone. This is in addition to the eleven to eighteen additional personnel that will be required as ODAFF pursues NPDES delegation as directed under 27A O.S. 1-3-103.

ILLINOIS RIVER WATERSHED

The Illinois River is the icon of Oklahoma's Scenic Rivers and is unquestionably one of Oklahoma's most outstanding natural resources. Both Flint Creek and the Barren Fork flow into the Illinois River and, thus, are included in the greater Illinois River watershed. Without doubt, the Illinois River watershed has been the subject of more monitoring and restoration activity than any other watershed in the state. Despite all of this effort, monitoring indicates that water quality continues to decline and impairments continue to exist in this most treasured watershed.

As Table 1 indicates, excessive phosphorus and bacteria currently impair the Illinois River, Flint Creek, and Barren Fork Creek. Additionally, one segment of the Illinois River is showing turbidity impairment. Not enough is known about the source(s) of bacterial and turbidity impairment, but the State's new Integrated Water Quality Assessment Report, which includes the impairments indicated above, will dictate an expedited water quality monitoring effort to better define the sources. This will lead to the development of a TMDL for these pollutants, followed by an implementation strategy to meet the pollutant reduction goals established in the TMDL. The sources of phosphorus impairment, however, are well understood due in large part to the enormous amount of available data and modeling information. While all three Scenic Rivers in the Illinois River watershed are impaired by phosphorus, relative to the newly adopted

0.037 mg/L phosphorus criterion, it should be noted that the Barren Fork Creek only exceeds the criterion slightly (0.040 mg/L on average).

According to the OSRC's Illinois River Management Plan (1999):

Visitors to the area are often pleasantly surprised to find rolling hills, hardwood forests made up of oaks and hickories, and clear running streams where smallmouth bass abound. A popular destination for canoeists and fishermen, the scenic Illinois River is a critical watershed for local municipalities and a habitat for several state and federal threatened and endangered species. The river basin is also a vital economic resource for many businesses in the city of Tahlequah and along the scenic State Highway 10 corridor. Each year more than 180,000 persons float the Illinois River by canoe, raft or kayak. An estimated 350,000 enjoy swimming, fishing, camping, hiking, bird-watching, and hunting opportunities. Recreationists spend an average of \$55.92 per float trip per person on gas, food, and lodging, and other amenities. This spending results in about \$9 million of direct economic impact annually on Cherokee County and the surrounding area.

While Oklahoma values the unprecedented aesthetic and recreational opportunities provided by the Illinois River watershed, not to mention the roughly \$9 million annual economic impact generated by these opportunities, roughly half of this watershed lies in the increasingly urbanized area of Northwest Arkansas. U.S. Department of Commerce figures show that the Northwest Arkansas area is one of the six fastest growing metropolitan statistical areas in the United States. This area of Arkansas also serves as the headquarters for most of the nationally significant poultry companies, and poultry operations in the Arkansas side of the watershed outnumber Oklahoma operations approximately 5 to 1. This rapidly growing area of Northwest Arkansas is the source of significant impacts on the Illinois River, and any efforts to reverse impairment within the watershed will be heavily dependent upon actions taken in Arkansas.

Maps and tables showing the regulated pollution sources within the Illinois River watershed are included in **Attachments C and D**, respectively. The ODEQ currently regulates two dischargers under its Oklahoma Pollution Discharge and Elimination Systems ("OPDES") program – **wastewater treatment facilities** at the City of Tahlequah and the City of Westville. Because phosphorus problems in the Illinois River watershed have been recognized by Oklahoma for a decade or more, the City of Tahlequah expended millions of dollars in an effort to meet a 1 mg/L phosphorus discharge limit first issued in its November 1992 permit. Even though it is considered a "minor" discharger due to its design flow of less than one million gallons per day ("1 MGD"), the City of Westville was initially placed under a compliance order by the ODEQ in 2000 to begin meeting a 2 mg/L phosphorus discharge limit. However, after the new phosphorus criterion was promulgated by the OWRB in 2002, ODEQ modified Westville's compliance order to require the Westville Utility Authority to meet a 1 mg/L phosphorus discharge limit by May 2004.

As mentioned previously, the major municipalities in Arkansas that discharge into the Illinois River or its tributaries have committed to meet the same 1 mg/L phosphorus discharge limit imposed on Oklahoma's dischargers in an effort to avoid future litigation (see letter from Mayors, **Attachment A**). The City of Fayetteville already has a 1 mg/L phosphorus limit in its

permit but plans to spend roughly \$130 million dollars on a new wastewater treatment plant that will include a 1 mg/L phosphorus limitation. Fayetteville anticipates having the new system operational sometime in 2005, and Oklahoma officials continue to work closely with Fayetteville to ensure that no additional phosphorus impacts will result from this new discharge. The City of Rogers voluntarily meets a 1 mg/L phosphorus limit in its discharge, and in fact routinely meets 0.5 mg/L phosphorus, but is planning a \$4 million expansion to be completed within two years.

Currently, the Arkansas cities of Springdale and Siloam Springs have no phosphorus limits, but both have committed to upgrade treatment facilities in order to meet 1 mg/L. Springdale is preparing to spend approximately \$18 million on upgrades and expansions that should be completed within five years, and Siloam Springs estimates needing \$12 million and eight years in order to meet a 1 mg/L permit limit for phosphorus. From the letter submitted by the Arkansas Mayors (**Attachment A**), it appears that the City of Bentonville also is committed to meeting the same phosphorus limit as the other dischargers. This assurance is intriguing since Bentonville currently does not discharge to any of the Scenic River watersheds.

There has been no commitment thus far for "minor" dischargers in Arkansas to meet the same 1 mg/L phosphorus limit imposed by ODEQ on Westville's "minor" discharge. While the phosphorus impact of these "minor" sources is likely to be small relative to the impact of the larger municipalities, their cumulative effect could be crucial to the overall effort to reverse impairment in the Illinois River watershed. Additionally, the numerous proposals to "expand" existing treatment plants to keep pace with the rapidly growing population in Northwest Arkansas, not to mention the potential for adding new discharges in the watershed (e.g., Bentonville), provide an alarming opportunity for increased phosphorus loading into this already impaired system. Addressing the impacts of minor dischargers, as well as the potential for increased phosphorus loading, will be critical to ensuring the long-term protection and restoration of the Illinois River watershed.

In addition to municipal dischargers, ODEQ is required to regulate certain **storm water discharges** in Scenic Rivers and their watersheds. Under *OAC 785:45-5-25(c)(1)*, Outstanding Resource Waters ("ORW") and their watersheds are prohibited from having any new point source discharge(s) of any pollutant or increased load of any pollutant from existing point source discharge(s). Exceptions are allowed for discharges of storm water from point sources existing as of June 25, 1992, whether or not such storm water discharges were permitted as point sources prior to June 25, 1992, and for storm water from temporary construction activities. **Attachments C and D** provide maps and tables, respectively, for the authorized storm water discharges as of January 24, 2003. No enforcement actions related to storm water have been undertaken in these watersheds.

ODEQ also will be required to regulate the City of Tahlequah under EPA's new Storm Water Phase II regulations. Under these regulations, ODEQ was tasked with reviewing potential Small Municipal Separate Storm Sewer System ("MS4") owner/operators and designating those small MS4s that will need to be regulated under the Phase II rules by December 9, 2002. Because it meets the conditions under this new regulatory program, Tahlequah must complete an application and obtain coverage under the Phase II small MS4 general permit by June 10, 2003. Under this permit, Tahlequah will be tasked with developing a storm water management program that addresses six minimum measures:

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site storm water runoff control
- Post-construction storm water management in new development and re-development
- Pollution prevention/good housekeeping

The local program must be fully implemented within five years after permit authorization.

Due to numerous questions about the water quality impacts of other sewage sources, ODEQ coordinated with OSRC to conduct a study in 1997 on the potential impact wastewater management systems may have on the quality of the Illinois River. The primary objective of this study was to identify non-residential **septic systems**. Residential septic systems only were evaluated when there were multiple dwellings utilizing the same system, a significant number of dwellings were concentrated in a given area, or if a system was utilized as part of some commercial activity. The initial focus was on septic systems; however, to ensure a comprehensive evaluation of wastewater systems in the area, disposal systems such as pit privies, lagoons, and wastewater treatment plants were targeted, as well.

Staff from ODEQ and OSRC worked cooperatively to collect data to ensure a comprehensive evaluation of systems within the defined study area. Study objectives were to locate sites of interest and then collect sufficient site-specific data to allow staff to make a determination on a system's potential to impact the quality of the Illinois River. This study identified 59 septic systems, three community wastewater treatment plants, and eight pit privies. Site information was brought into a Geographic Information System ("GIS") allowing staff to determine that the majority of sites were located significant distances from the Illinois River and its tributaries. Flow estimates indicated that most septic systems handled fairly small flow volumes. Based on these findings, systems identified in this study were found to pose no apparent significant threat to the quality of the Illinois River.

ODAFF reports that 102 registered **poultry operations** exist in the Oklahoma portion of the Illinois River watershed, most of which are broiler operations. These operations manage a total of 675 houses and 11,051,720 birds (see **Attachments C and D**). Using standard manure characteristics, ODAFF estimates that 99,465 tons of poultry litter are generated each year, which yields 1,151 tons of total phosphorus (2,636 tons of P₂O₅). Based upon soil samples collected by ODAFF field inspectors, coupled with records submitted to ODAFF by poultry litter applicators, preliminary estimates are that 20% of the poultry litter application fields in the Scenic River watersheds have reached the 250 soil test phosphorus ("STP") threshold. This translates into 19,893 tons of surplus litter generated in the Illinois River watershed that cannot be safely applied to existing land application fields. Obviously, these estimations will be refined as additional information is collected and a new phosphorus index is developed based upon the 0.037 phosphorus criterion. Further, ODAFF recognizes the critical need for instream water quality monitoring both upstream and downstream of poultry operations, in addition to at the state line, in order to more precisely assess the impact of agricultural activities on water quality.

Currently, more than 50% of the poultry operations in the watershed have submitted animal waste/nutrient management plans to ODAFF, and ODAFF will continue to assist growers in

obtaining and adhering to these plans. ODAFF reports conducting inspections of all poultry operations in the watershed, completing 175 such inspections in fiscal year 2002 alone in all of the Scenic River watersheds. Additionally, ODAFF provided technical assistance to growers on 290 occasions in fiscal year 2002 (all Scenic River watersheds). Also in FY 2002, ODAFF sent 76 warning letters and issued three fines for violators of the State's poultry statutes and rules in the Scenic River watersheds (see **Attachment D** for specific violators).

Similarly, documents supplied to EPA by the State of Arkansas contained data from 504 nutrient/animal waste management plans for operations in the Arkansas portion of the Illinois River watershed. Arkansas estimated that these plans represented 95% of the poultry operations in existence. The data from these plans showed that about 145,000 tons of poultry litter is generated annually in the Arkansas portion of the Illinois River watershed. The recommendations contained in these plans called for the "movement of 80,000 tons off the farms," which means that approximately 55% of the litter generated is in excess.

ODAFF also regulates three large containerized **plant nurseries** along the Illinois River that have had irrigation tailwater return flow enter the river. These operations were monitored monthly for nitrate-nitrogen, total-phosphorous and pesticides from 1989 to 2001. Nurseries were notified by ODAFF when they were found to be out of compliance. One operation became totally contained in 1998 and only has runoff leaving its property during large rainfall events. These nurseries signed voluntary compliance agreements with ODAFF to reduce the yearly average nitrate level in their discharge from a high of 27.99 mg/l NO₃-N in 1989 to 10 mg/l in 1996. They also agreed to reduce the total phosphorus levels down to 1 mg/l.

In addition to the aforementioned regulatory activities, substantial amounts of State and Federal resources have been expended on projects to promote and install **nonpoint source best management practices** in the Illinois River watershed. The Oklahoma Conservation Commission ("OCC") has cooperated with numerous local, state, and federal partners to: 1) monitor land use, soils, water quality, aquatic life, and stream channel characteristics to identify causes and sources of water quality problems; 2) educate and inform watershed users and citizens about the importance of water quality and ways to protect it; and 3) implement practices to reduce nonpoint source pollution.

Recent efforts have included cooperative education programs with the OSRC to reduce nonpoint source pollution from recreation activities on the river. These projects included installation and maintenance of restroom, picnicking, and trash collection facilities along the river to reduce the impacts from canoers and other river users. Another project involved cooperation with Oklahoma State University to reduce pollution from plant nurseries in the watershed. This project involved reducing pesticide and nutrient pollution by collecting and recycling irrigation water rather than letting it run offsite.

Additionally, OCC has been working on one of the longest running, most intensive sampling efforts in the watershed with the *Peacheater Creek Paired Watershed National Monitoring Program Project*. Analysis of the pre-implementation monitoring data for the Peacheater Creek project highlighted some interesting problems that had not been of much concern up to that point. Nutrients have long been acknowledged as a concern in the Illinois River watershed. Although nutrient concentrations in Peacheater Creek were elevated (median phosphorus value of 0.04 mg/L), they were not extremely high. A more serious problem in Peacheater Creek was

streambank erosion. Streambank erosion, and in some places upland clearing, produced a huge gravel load that was filling in aquatic habitat and causing the stream to run subsurface in many areas. These gravel loads also threatened channel stability downstream. Analysis of streambank material and measurement of bank erosion over time suggested that a considerable portion (ranging from 20 to 90 percent) of nutrient loading to the creek could be the result of streambank erosion. Although nutrient loading is probably the greatest threat to the Illinois River and Lake Tenkiller, streambank erosion, gravel loading, and loss of riparian habitat may be the greatest threat to the smaller streams in the watershed.

With the results of pre-implementation monitoring in mind, OCC developed an implementation program in the Peacheater Creek Watershed to reduce nonpoint source pollution. These efforts are set to end in late winter of 2003; therefore, data is not yet available to gage their success in improving water quality in Peacheater Creek. However, implementation of this program provided information that was useful in developing a larger-scale implementation effort that was applied to the entire Oklahoma portion of the Illinois River watershed.

The *Illinois River/Barren Fork Watershed Implementation Program* began in 1999. The goal of the project was to implement practices to reduce nonpoint pollution from the most significant sources in the Illinois River watershed. A Watershed Advisory Group ("WAG"), made up of local citizens representing different interests in the watershed (i.e., poultry industry, recreation, cattlemen, etc.), recommended practices and cost-share rates to be offered. The program is implemented through the local conservation districts. Conservation district personnel and the local Natural Resources Conservation Service ("NRCS") work with landowners in the watershed to develop animal waste management and farm plans. Cost-share assistance is offered to help landowners implement these plans.

More than \$1.3 million worth of State and Federal funding was available for the project. As the program nears its third year of implementation, a substantial number of practices are already on the ground. Practices are divided into three separate categories or priorities; higher priority practices receive higher rates of cost-share.

The highest priority category is *Riparian Area Management and Establishment*. Cost-share is available at a rate of 80% to implement these practices. Forty-four landowners signed up to implement one or more of twenty-three different types of practices in this category (Table 3). Currently, \$22,467 of the planned \$166,904 worth of riparian area practices have been implemented. These values do not include the landowner's share of the implementation costs. Landowners contribute at least 20% of the cost of Riparian Area Practices. The practices that have yet to be implemented are scheduled to go in during the next two years.

Priority 2 practices were those that focused on *Animal and/or Human Waste Management Systems*. Cost-share was offered at a rate of 70% to implement these practices. Fifty landowners signed up for one or more of ten different practices that fell into this category (Table 3). At this point, \$38,728 of the planned \$98,986 worth of waste management practices have been installed. The remaining practices should be implemented within the next two years.

Priority 3 practices focused on pasture management to reduce nonpoint source pollution. These practices were offered at a cost-share rate of 60%. One hundred and five landowners signed up for one or more of eleven different pasture management practices (Table 3).

Currently, \$72,731 of the \$373,114 worth of practices planned in this category have been implemented.

In total, 141 landowners have signed up to participate in the program. With the landowner contributions included, at least \$1,000,131 worth of practices have been, or soon will be, implemented.

A watershed education program is running concurrent to the implementation program. This program has been developed under the guidance of an Education Watershed Advisory Group ("EdWAG"), which, like the WAG, is made up of local representatives. The EdWAG developed an education program with the purpose of improving water quality in the basin through educational materials focusing on targeted water quality problems and sources of pollution. Targeted water quality problems were identified as nutrients, sediment, and solid waste, and targeted sources were animal waste, streambank erosion, septic systems, and recreational use. Target audiences were categorized relating to particular sources they might be affecting.

Specific goals of the education program are to: 1) Develop a community education program that will explain the need to protect our water resources, 2) Develop volunteer monitoring groups in both counties that will educate the public and upper grade school and high school students on what is in our water and ways to improve it, 3) Make the public in the Illinois River Basin aware of the challenges with the water in the Illinois River and make them aware of the 319 Water Quality Program, and 4) Address the agricultural community needs through seminars, tours, etc., that address poultry, beef, and dairy. The program is addressing these goals through elementary school programs, volunteer monitoring programs, public education programs (such as river fairs, river clean-up days, etc.), and seminars and tours of demonstration sites for producers.

OCC is also cooperating with the OSU Cooperative Extension Services ("OSU-CES") on another educational effort in the watershed. The OSU-CES education program began before the Illinois River/Barren Fork Watershed Implementation Program, although they share some of the same goals. This program is developing a number of educational materials, such as brochures on urban runoff and pollution prevention for recreational users, as well as a landowner conservation handbook. The program also conducts environmental fairs/educator training programs and has volunteer monitoring teams, in addition to a number of other tours, reports, and seminars. Implementors of this education program have coordinated thoroughly with implementers of other education efforts in the watershed.

Table 3. Practices Funded Under the Illinois River/Barren Fork Watershed Implementation Program.

Priority /Category	Practice	# Land Owners	Amount implemented	Remaining Amount Obligated	Landowner Contribution	Total Planned
Riparian Management	Buffer Strip Fencing	28	\$13,298	\$42,839	\$11,233	\$67,398
	Buffer Strip Incentive Payments*	4	0	\$1,552	\$0	\$1,552
	Buffer Strip Establishment - Tall Fescue	1	0	\$22	\$4	\$26
	Access Lane to Stream- geocell	1	0	\$2,505	\$501	\$3,006
	Access Lane to Stream- geotextile	2	0	\$2,752	\$550	\$3,302
	Access Lane to Stream Grading and Shaping	2	0	\$483	\$97	\$580
	Access Lane to Stream Gravel	1	0	\$720	\$144	\$864
	Riparian Area Fencing	5	\$1,441	\$11,999	\$2,688	\$16,128
	Alternative Water Supply- pipeline from spring	2	\$0	\$392	\$78	\$470
	Alternative Water Supply- Fence off Spring	2	\$0	\$448	\$90	\$538
	Riparian Area Incentive Payments- Total Exclusion*	18	\$5,335	\$90,285	\$0	\$95,620
	Riparian Area Incentive Payments- Total Exclusion with Hay*	4	\$243	\$6,579	\$0	\$6,822
	Offsite Watering- freeze-proof tank	3	\$640	\$1,334	\$395	\$2,369
	Offsite Watering- pipeline to tank	2	\$109	\$761	\$174	\$1,044
	Offsite Watering- pond	3	\$885	\$4,010	\$979	\$5,874
	Vegetative Establishment - Tall Fescue	1	\$23	\$6	\$6	\$35
	Vegetative Establishment fertilizer (based on soil test)	1	\$14	\$4	\$4	\$22
	Vegetative Establishment Liming (based on soil test)	1	\$26	\$7	\$7	\$40
	Vegetative Establishment no till drill	1	0	\$10	\$2	\$12
	Vegetative Establishment seedbed preparation	1	\$10	\$2	\$2	\$14

	Riparian Buffer tree planting- bare-rooted trees	1	\$443	\$0	\$89	\$532
	Riparian Buffer tree planting- potted trees	2	0	\$277	\$55	\$332
	Riparian Buffer tree planting- seedbed preparation	1	0	\$24	\$5	\$29
	Total Riparian Practices	41	\$22,467	\$166,904	\$17,103	\$206,609
Animal / Human Waste Management Systems	Animal Waste System Clay Liner	4	\$0	\$2,908	\$872	\$3,780
	Animal Waste System Concrete Floor	10	\$167	\$21,872	\$6,612	\$28,651
	Animal Waste System Excavation	7	\$1,834	\$5,231	\$2,120	\$9,185
	Animal Waste System Fencing	7	\$253	\$2,568	\$846	\$3,667
	Animal Waste System PVC pipe	6	\$0	\$963	\$289	\$1,252
	Septic Tank Lateral Lines	38	\$33,547	\$56,035	\$26,875	\$116,457
	Septic Tank Percolation Test	32	\$637	\$3,304	\$1,182	\$5,123
	Septic Tank- 1000 gallons	28	\$2,009	\$5,299	\$2,192	\$9,500
	Septic Tank- installation	28	\$280	\$805	\$326	\$1,411
	Waste Management Practices Total	50	\$38,728	\$98,986	\$41,314	\$179,026
Pasture Management	Pond	52	\$14,735	\$45,813	\$24,219	\$84,767
	Fencing	86	\$38,939	\$187,881	\$81,046	\$307,866
	Freezeproof Tank	46	\$11,663	\$56,977	\$27,456	\$96,096
	Concrete Pads for Round Bale Feeding	7	\$2,115	\$11,010	\$5,250	\$18,375
	Heavy Use Areas- Geotextile	15	\$1,835	\$46,024	\$19,144	\$67,003
	Heavy Use Areas- Grading and Shaping	3	\$0	\$170	\$68	\$238
	Gravel for Heavy Use Areas	3	\$0	\$1,960	\$784	\$2,744
	Heavy Use Areas Terra Cell	1	\$0	\$1,566	\$626	\$2,192
	PVC Pipeline for Alternative Water Supply	44	\$3,443	\$20,002	\$9,378	\$32,823
	Spring Development as Alternative Water- Perforated PVC	2	\$0	\$228	\$91	\$319
	Spring Development - Pipeline to Tank	3	\$0	\$473	\$189	\$662
	Spring Development - Spring Box	5	\$0	\$1,008	\$403	\$1,411
	Pasture Management Totals	105	\$72,731	\$373,114	\$168,654	\$614,496

****no match required from landowners on incentive payments***

OCC programs are not the only nonpoint source-related implementation efforts ongoing in the Illinois River watershed. The NRCS has included the Illinois River/Lake Tenkiller watershed as one of its highest priority areas for funding through its Environmental Quality Incentives Program (“EQIP”). Where possible, conservation district and NRCS personnel have tried to use the two programs to compliment each other to provide landowners with maximum allowable assistance. In other words, the Illinois River/Barren Fork Program funds practices that EQIP does not, or vice versa, which allows the landowner to apply for funds to implement his entire farm plan, rather than just parts of it. Table 4 documents practices funded under EQIP in the Illinois River watershed. NRCS has obligated \$327,641 worth of practices in the watershed, and so far, \$68,565 worth (or 21%) of those practices have been implemented.

Table 4. EQIP Practices Funded in the Illinois River Watershed.

Practice	# of Contracts	Farm Acres	\$ obligated	\$ implemented
Brush Management	16	9,139	\$21,917	\$0
Composting Facility	28	8,022	\$90,218	\$21,101
Fence	14	30,335	\$28,814	\$7,113
Nutrient Management	27	18,721	\$1,682	\$0
Pest Management	25	2,757	\$3,607	\$0
Pipeline	5	805	\$2,996	\$0
Pond	21	18,471	\$22,574	\$10,964
Prescribed Grazing	17	6,658	\$4,923	\$1,736
Streambank/Shoreline Protection	1	170	\$3,188	\$0
Use Exclusion	10	974	\$5,442	\$0
Waste Management System	15	60,845	\$10,428	\$9,832
Waste Storage Facility	41	21,823	\$114,839	\$14,881
Waste Treatment Lagoon	7	3,004	\$0	\$0
Waste Utilization	15	40,633	\$2,938	\$2,938
Totals	242	222,357	\$327,641	\$68,565

Finally, and in addition to the other aforementioned cooperative efforts involving OSRC, the Oklahoma Legislature authorized OSRC to promulgate standards, rules, and ordinances to protect and preserve Scenic River Areas from **recreational impacts**. The OSRC typically relies upon the environmental and public health expertise of the other state environmental agencies, in addition to the Oklahoma State Department of Health, in establishing environmental standards and requirements for commercial recreational businesses and facilities within its operating area of jurisdiction.

Presently, OSRC rules and regulations require all commercial floatation operations (i.e., canoe, kayak, and raft float businesses) to meet minimum health and safety requirements found at *OAC 630:10-1-5(g)* in order to be granted OSRC Commercial Floatation Device Permits. There are a number of other requirements relating to safety for floaters (i.e., personal floatation devices and equipment), and failure by any commercial operation to meet these rules could result in revocation of their OSRC licenses. Some of these additional requirements are listed at *OAC 630:15* and *82 O.S. 2002, section 1455*.

Annually, OSRC partners with commercial floatation operations, area businesses, non-governmental agencies, local/State/Federal/Tribal agencies, and other individuals to host at least two river area cleanup events. These annual events result in approximately 4-8 tons of litter collected by approximately 200-300 volunteers. Additionally, OSRC has an institutional

program that polices the river areas everyday of the year, except for Christmas Day, for trash. In summer months, OSRC hires 2-5 individuals who float the rivers by boat and collect trash. Annually, OSRC distributes over 60,000 trash bags free-of-charge to river visitors.

In OSRC-operated public access areas, the Office of the Secretary of Environment, OCC, EPA, and Cherokee County Conservation District partnered with OSRC to construct twelve "environmentally-friendly" pit toilet facilities adhering to the Americans with Disabilities Act. Those facilities are attributed with removing approximately 100,000 gallons of wastewater generated by visitors to the river areas over the past five years. OSRC also utilized EPA grant funds to provide 17 portable toilets during the 1999, 2000, and 2001 recreation seasons. This program contributed to the safe disposal of over 16,000 gallons of wastewater per season (50,000 gallons total). Unfortunately, this program was discontinued in 2002 due to the expiration of EPA funds.

In 2002, OSRC Rangers contributed to the mitigation of recreational pollution by issuing 91 citations for glass container violations, 66 citations for littering, 7 citations for styrofoam container violations, and 16 citations for driving on the streambed. Most importantly, OSRC adopted *The Illinois River Management Plan* ("Plan") in 1999 to provide river stakeholders with guidance on over 20 major goals and 130 strategies to affect long-term protection and preservation of the Illinois River watershed. What makes the Plan so important is that extensive stakeholder involvement and participation guided its development. This Plan is to be revisited by stakeholders beginning in January 2004. Copies of this extensive, invaluable document can be obtained from the OSRC or Office of the Secretary of Environment.

UPPER MOUNTAIN FORK WATERSHED

In many ways, the Upper Mountain Fork River surpasses the Illinois River in terms of water quality. It currently meets Oklahoma's 0.037 mg/L phosphorus criterion, although continued monitoring is critical to ensure that its attainment status is protected. The Upper Mountain Fork provides water for Oklahoma's highest quality large reservoir, Broken Bow Reservoir, which serves as a large fishing and recreation destination for many Oklahomans, as well as large numbers of tourists from Texas and Arkansas. One of the state's two year-round trout fisheries exists just below Broken Bow Reservoir; the other is found below Tenkiller Lake on the Illinois River. A new state record brown trout was recently caught on the Mountain Fork below Broken Bow Reservoir, and the current state record largemouth bass was harvested from the lake. Additionally, the State of Oklahoma operates several lodges, campgrounds, and State Parks surrounding Broken Bow Reservoir, including the spectacular Broken Bow Lodge.

Recent water quality monitoring (Table 1) indicates that the Upper Mountain Fork is impaired by turbidity, lead, and low pH. The specific sources of turbidity are not well known, but the overwhelming majority of the watershed is utilized for silviculture. Additional, more intensive monitoring will be conducted by the State to ascertain the exact sources and causes of high turbidity, culminating in the development of a TMDL and appropriate implementation activities to abate the impairment.

As for the pH impairment indicated in Table 1, it is important to note that many of the waterbodies of southeast Oklahoma are considered to be naturally acidic. Because they are

poorly buffered, they show much greater effects from any introduction of acidic material. The latest draft of the State's 303(d) list shows many southeastern waterbodies to be impaired by low pH. Included in this set are the Upper Mountain Fork and Broken Bow Reservoir.

The criteria for pH in the OWQS are designed to be protective statewide for regulatory applications. Although the pH of the Mountain Fork falls outside the regulatory range, it is possibly still adequate to support its cool water aquatic community beneficial use. In response, OWRB staff will seek funding to determine if the low pH values found in these waters result from natural causes and, thus, warrant the promulgation of more accurate site-specific criteria. Additional monitoring, review of historical data, land use, local geology, and rainfall constituents will be required to determine if the pH impairments identified are naturally occurring, if the numerical criteria in the OWQS are applicable, and if a site-specific criterion is required. Biological assessments also may be needed to determine if beneficial uses are supported.

The toxicity of most metals is directly affected by water hardness. Criteria for lead toxicity are therefore calculated through a formula based upon waterbody hardness. Lead is less toxic in hard waters and is considered to be more toxic in soft waters. The criteria for lead in the OWQS are designed to be protective statewide for regulatory applications. The very soft waters of the Upper Mountain Fork have been shown to have lead concentrations greater than the calculated criterion and have subsequently been deemed not supporting of its fish and wildlife beneficial use. Although above the regulatory lead criteria, water quality in the Upper Mountain Fork is possibly still adequate to support its cool water aquatic community. Accordingly, OWRB staff will seek funding to assess the toxicity of lead concentrations found in these waters and to ascertain whether the promulgation of more accurate site-specific criteria is warranted. Such studies are generally considered to be necessary before any regulatory action.

Attachments C and D provide maps and tables, respectively, listing the regulated pollution sources in the Upper Mountain Fork watershed. ODEQ has no regulated point sources in the watershed, and the ADEQ regulates only a few **"minor" dischargers** in the upper portion of the watershed. Although these minor dischargers in Arkansas are not known to be causing impairment at this time, Oklahoma officials are interested in taking proactive measures to reduce the threat of impairment as it works with Arkansas on implementation strategies to protect all Scenic Rivers. In particular, Arkansas officials already have provided information on the amount of phosphorus contributed by its minor sources so that Oklahoma can determine whether additional controls may be necessary to avoid future noncompliance with its phosphorus criterion.

ODAFF reports that 17 registered **poultry operations** exist in the Oklahoma portion of the Upper Mountain Fork watershed, most of which are broiler operations. These operations manage a total of 73 houses and 1,224,500 birds (see **Attachments C and D**). Using standard manure characteristics, ODAFF estimates that 11,020 tons of poultry litter are generated each year, which yields 127 tons of total phosphorus (292 tons of P_2O_5). Based upon soil samples collected by ODAFF field inspectors, coupled with records submitted to ODAFF by poultry litter applicators, preliminary estimates are that 20% of the poultry litter application fields in the Scenic River watersheds have reached the 250 soil test phosphorus ("STP") threshold. This translates into 2,204 tons of surplus litter generated in the Upper Mountain Fork watershed that cannot be safely applied to existing land application fields. Obviously,

these estimations will be refined as additional information is collected and a new phosphorus index is developed based upon the 0.037 phosphorus criterion.

As previously mentioned, the largest single land use for the Upper Mountain Fork watershed is **silviculture**. Oklahoma's Scenic Rivers are generally located in heavily forested areas, primarily because forested watersheds are recognized as providing the highest quality water. Based upon the forest inventory conducted periodically by the U.S. Forest Service (1993 data), approximately 54% of the 18 eastern Oklahoma counties are forested. The U.S. Forest Service also estimates that private individuals own 67% of the region's forests, with 20% owned by forest industry.

In general terms, potential water quality problems associated with forest use arise from runoff, especially from exposed soil. Soil erosion may result in sedimentation and turbidity, suspended solids, and organic debris in local streams. Other possible impacts include excessive nutrients from fertilizer application and chemical problems associated with pesticide application.

Based upon years of water quality and forest practice monitoring done from the mid-1970s through the early 1990s by ODAFF, as well as industry and university researchers, roads are identified as the greatest contributor to forest-related water quality problems. It is important to note that all rural roads contribute to pollution problems, not just those used by the forest industry. State and county roads, as well as non-forestry recreational use roads, contribute to soil erosion. ODAFF Forestry Division initiated a formal forest water quality program in 1976, and has pursued a non-regulatory approach to forest water quality management. Statutory authority is included in the Oklahoma Forestry Code (*2 O.S. 2002 Section 16-3*).

In 1976, ODAFF Forestry Division worked with a Governor's Blue Ribbon Panel to develop the State's first forestry best management practices ("BMP"). ODAFF continues to revise and upgrade its *Forestry Best Management Practice Guidelines* and promotes their use at every opportunity. Oklahoma completed its first round of BMP monitoring in 1977-78. In 2000, ODAFF initiated a new compliance-monitoring program that is consistent with the monitoring protocol developed by the Southern Group of State Foresters. From a pool of 800 potential sites, ODAFF selected 75 for intensive compliance monitoring in order to determine whether the BMPs were actually being used. Of the sites monitored so far, many of which were on industry land in southeastern Oklahoma, 90 percent passed inspection.

ODAFF has met with, and provided BMP information to, the major companies that own or operate silviculture operations in Oklahoma. In most cases, the major timber companies are in compliance with the BMPs. Most of the larger companies have been inspected and certified under the Sustainable Forestry Initiative ("SFI") as practicing forestry in an environmentally responsible manner. ODAFF's greatest difficulties lie with small, independent loggers that haul to smaller mills, not to mention the number of private landowners who often lack good information. It is for this reason that raising the awareness of loggers, landowners, land managers, contractors, forest industry, and the public is critical to program success.

All forestry-related water quality complaints from landowners, agencies, or the public are investigated by ODAFF, and they work with private landowners, industries, or individual loggers to resolve problems. In the past four years, ODAFF investigated roughly ten formal complaints and was able to obtain corrective action from loggers in every case.

ODAFF has held or participated in 30-40 BMP “logger workshops” in cooperation with the Arkansas Timber Producers Association during the past five years. In 2000, ODAFF also initiated a logger certification program in cooperation with the Oklahoma Forestry Association. This effort is designed to identify and recognize loggers who are responsible and do a good job of implementing BMPs. To be a “certified logger,” operators must attend BMP training and demonstrate good logging practices according to the BMPs. Additionally, EPA-funded projects helped ODAFF to demonstrate proper water quality management in several case studies. A wide variety of road construction and maintenance practices were installed on the Buck Creek demonstration road near Daisy, Oklahoma. This road is used for logger, landowner and forester field days and workshops to show effective, low-cost road BMPs.

ODAFF foresters have been involved with several projects to help restore riparian area vegetation to reduce erosion, filter runoff, and stabilize streambanks. They also have assisted the OSRC with tree planting along the Illinois River. Additionally, ODAFF foresters provide technical assistance to forest landowners throughout the state, with most of the effort concentrated in eastern Oklahoma. ODAFF prepares customized forest management plans and provides advice on tree planting, timber harvesting, erosion control, and other water quality/wildlife practices.

In the future, ODAFF intends to go through a formal BMP review and revision process, in cooperation with the forestry water quality committee, and publish a revised BMP manual. ODAFF will complete its forestry BMP compliance monitoring project within the next six months and publish the results. This will enable ODAFF to compare Oklahoma’s BMP compliance with other states, as well as to establish trends. ODAFF will cooperate closely with the Arkansas Timber Producers Association and Oklahoma Forestry Association to expand its logger training and education program, as well as the logger certification program. And ODAFF will be administering a new program created in the 2002 Farm Bill, called the *Forest Land Enhancement Program*, that will provide increased technical and financial assistance to landowners.

LEE CREEK/LITTLE LEE CREEK WATERSHED

Relative to the other Scenic Rivers, little is known about the water quality of Lee and Little Lee Creeks. Accordingly, **additional monitoring** is scheduled to more adequately assess the attainment status of these waters, in addition to their overall water quality. Oklahoma agencies do know, however, that Lee and Little Lee Creeks contain exceptional water quality and unique fishery/habitat characteristics such that they are afforded additional protections under OWQS as “Outstanding Resource Waters.” In fact, the data that are available on these streams shows that both have phosphorus concentrations well below the new 0.037 mg/L criterion promulgated by the OWRB.

Maps and lists of pollution sources are provided in **Attachments C and D**. As is evident from the attachments, ODEQ does not regulate any point source discharges in the Lee and Little Lee Creek watersheds, and ADEQ only regulates **two “minor” PDES facilities**. ODAFF regulates only seven registered **poultry operations** in these watersheds. These operations manage a total of 12 houses and 182,300 birds. Using standard manure characteristics, ODAFF estimates

that 1,640 tons of poultry litter are generated each year, which yields 19 tons of total phosphorus (43 tons of P₂O₅). Based upon soil samples collected by ODAFF field inspectors, coupled with records submitted to ODAFF by poultry litter applicators, preliminary estimates are that 20% of the poultry litter application fields in the Scenic River watersheds have reached the 250 soil test phosphorus ("STP") threshold. This translates into 328 tons of surplus litter generated in the Lee and Little Lee Creek watersheds that cannot be safely applied to existing land application fields. Obviously, these estimations will be refined as additional information is collected and a new phosphorus index is developed based upon the 0.037 phosphorus criterion.

While no regulated dischargers exist in the Oklahoma portion of this watershed, the Oklahoma Corporation Commission reports 44 **gas wells** under its jurisdiction within the Lee/Little Lee Creek watershed. Currently, none of these wells have any outstanding enforcement actions pending before the Oklahoma Corporation Commission and, thus, are not known to be causing pollution problems.

CONCLUSION

The State of Oklahoma fully expects the next twelve months to bring even greater accomplishments in terms of tangible actions to address the threats to Oklahoma's Scenic Rivers. Once the OWQS and, in particular, the phosphorus criterion contained therein, are approved by EPA, an unprecedented level of effort and action will be unleashed. Should the Oklahoma Legislature continue to provide support for monitoring programs, the State and its partners will continue to collect valuable data on water quality threats and impairments. Additionally, the TMDL process will ensue in the months ahead, resulting in more specific pollution reduction goals for agencies, as well as the activities that they regulate. Most importantly, continued discussions with Arkansas should result in cooperative efforts to develop and implement TMDLs that stretch across state boundaries.

Ultimately, all of these activities will result in drastically needed pollution reductions aimed at restoring water quality in the state's invaluable Scenic Rivers. Just as it has taken decades for pollution to impair the beneficial uses of these waters, so to will it take many years for noticeable improvements to be made. However, Oklahoma's state environmental agencies are united like never before in their desire to initiate actions today so that discernible improvements can be measured tomorrow. Because the Scenic Rivers of Oklahoma were afforded special protection by the Oklahoma Legislature decades ago, and because these waters are so esteemed and appreciated by the citizens of Oklahoma, the continued degradation of these important natural resources is simply unacceptable.

Attachment A

**Letter from Mayors of Major Northwest Arkansas Municipalities
Pledging to Meet 1 mg/L Phosphorus Discharge Limits**

Attachment B

**Draft Summaries of Proposed Arkansas Legislation to Regulate Poultry Operations
and Nutrient Application in Nutrient Surplus Watersheds**

Attachment C

Maps Depicting Pollution Sources in Scenic River Watersheds

Attachment D

Data Tables Listing Regulated Pollution Sources in Scenic River Watersheds