

Nonpoint Source Pollution in the Strawberry River Watershed

November 2015

The Strawberry River Watershed is located in northeast Arkansas and includes Independence, Izard, Fulton, Lawrence and Sharp counties.

A “watershed” is an area of land where all of the water that drains from it goes to the same place, so rainwater or snowmelt in this watershed eventually drains to a common location.

This 769-square-mile watershed is sparsely populated with only about 20,000 people.¹ More than half the watershed, or 57 percent, is covered by forest. Another 35 percent is considered pastureland.² The Strawberry River is popular for recreation, including paddling and fishing. The river, which starts in Fulton County and flows toward the Black River, is part of the state’s Natural and Scenic River System and supports more than 100 species of fish.³

Nonpoint Source Pollution

Water pollution that comes from multiple sources spread over an area, such as runoff from parking lots, agricultural fields, residential lawns, home gardens, construction, mining, and logging, is known as nonpoint source pollution. As runoff moves across the landscape, it carries natural and manmade substances that can accumulate in waterways and make them uninhabitable for aquatic species or unusable by people. Potential pollutants include bacteria, nutrients, sediment, hazardous substances and trash.⁴ Given the number of potential sources and variation in their potential contributions these pollutants are not easily traced back to their source.



Strawberry River Watershed

Data source: GeoStor. Map created March 2011.

Major streams: Caney Creek, Coopers Creek, Little Strawberry Creek, North Big Creek, Piney Fork, Reeds Creek, South Big Creek, Strawberry River

This fact sheet is intended to provide a better understanding of the Strawberry River and its place on the state’s priority list of 10 watersheds impacted by nonpoint source pollution.

Strawberry River Watershed Water Quality Issues

Through water quality monitoring, environmental officials in Arkansas have determined that water quality has been impaired in the watershed because of deteriorating unpaved roads, streambank erosion and agricultural activities on pastureland near waterways.⁵

The primary concerns for this watershed are turbidity, total suspended solids such as sediment,

¹BAEG, 2011. County-Wise Population Data. Biological and Agricultural Engineering Department. University of Arkansas Division of Agriculture: Little Rock, Arkansas. See the Nonpoint Source Pollution Management Plan at <http://www.uaex.edu/environment-nature/water/quality/NPSPollutionMgmt-Revised2015.pdf>.

²CAST, 2006. Land Use/Land Cover Data. Biological and Agricultural Engineering Department. University of Arkansas: Fayetteville, Arkansas. See the Nonpoint Source Pollution Management Plan.

³Poudel, S. Species Richness, Distribution and Relative Abundance of Freshwater Mussels (Unionidae) of the Strawberry River, Arkansas (2012). Graduate Masters Thesis. Paper 111. Available at http://scholarworks.umb.edu/masters_theses/111.

⁴Learn more about these categories in the Arkansas Watershed Steward Handbook available at <http://www.uaex.edu/environment-nature/water/docs/ag1290.pdf>.

⁵Learn more about water quality at <http://www.uaex.edu/publications/pdf/FSA-9528.pdf>.

fecal coliform bacteria, and phosphorus.⁶ The main source of the turbidity and total suspended solids is thought to be from unpaved roads, stream bank erosion and adjacent pastureland. Turbidity is a measure of the clarity of water and is often the result of excess silt or sediment entering a stream. High turbidity levels mean the water is murky from a variety of materials, such as soil particles, algae, microbes and other substances. Turbidity can affect aquatic life in waterways. Within the watershed, 40 miles of streams are designated as Extraordinary Resource Waters (ERW) that do not support aquatic life.^{7,8} An ERW is a water resource that is valued for characteristics such as beauty, recreation and social use.⁹ Total suspended solids (TSS) can include organic or inorganic solid materials such as sediment, bacteria, algae and industrial wastes that

Arkansas' Priority Watershed List for Nonpoint Source Pollution

Arkansas has used a watershed-based approach to nonpoint source pollution management, allowing the public to guide planning to address water quality concerns. The Arkansas Natural Resources Commission, or ANRC, administers the Nonpoint Source Pollution Management Program. The program exists to reduce water pollution through the funding of watershed planning and restoration activities, adoption of voluntary best management practices and the development of technologies that assist in water pollution reduction in Arkansas. Based on public input and the use of a qualitative risk assessment matrix, ANRC has designated 10 priority watersheds as needing the greatest attention. The current risk matrix¹⁰ identified the following priority watersheds for 2011-2016: Bayou Bartholomew, Beaver Reservoir, Cache River, Illinois River, L'Anguille River, Lake Conway-Point Remove, Lower Ouachita-Smackover, Poteau River, Strawberry River and Upper Saline.

in high concentrations can lower water quality by absorbing light. The source of the fecal coliform bacteria is thought to be related to agricultural practices.¹¹ In 2006, environmental officials in Arkansas determined the maximum amount of sediment the Strawberry River can receive and meet water quality standards. This determination is a calculation called Total Maximum Daily Load or TMDL.¹²

These concerns and its border state status led to the Strawberry River watershed being designated as a priority by the Arkansas Natural Resources Commission in the state's 2011-2016 Nonpoint Source Pollution Management Plan.¹³

Stakeholder Priorities

To encourage continued public input, the University of Arkansas' Division of Agriculture's Public Policy Center facilitated a water quality stakeholder forum for the Strawberry River Watershed in December 2014. Participants identified runoff from septic and sewer systems, streambank erosion and overall stream sedimentation as local priorities that needed addressing.

People who live, work or recreate in this watershed are encouraged to consider these community priorities when addressing water pollution. The public is also welcome to attend an annual stakeholder meeting where priority watersheds and nonpoint source pollution are discussed. For more information about nonpoint source pollution and its impact on the Strawberry River watershed, contact the Cooperative Extension Service, Arkansas Natural Resources Commission or the Arkansas Department of Environmental Quality. The Arkansas Watershed Steward Handbook is also a good source of information about basic water quality concerns and how the public can get engaged in addressing water pollution.¹⁴

⁶ The Nonpoint Source Pollution Management Plan is available at <http://www.uaex.edu/environment-nature/water/quality/NPSPollution-Mgmt-Revised2015.pdf>.

⁷ See the Nonpoint Source Pollution Management Plan.

⁸ Arkansas Watershed Steward Handbook is available at <http://www.uaex.edu/environment-nature/water/docs/ag1290.pdf>.

⁹ Learn more about extraordinary resource waters in the Arkansas Watershed Steward Handbook at <http://www.uaex.edu/environment-nature/water/docs/ag1290.pdf>.

¹⁰ Learn more about the qualitative risk assessment tool at <http://www.uaex.edu/publications/pdf/FSPPC116.pdf>.

¹¹ See the Arkansas Watershed Steward Handbook to learn more about TSS.

¹² TMDL reports are available at <http://www2.adeq.state.ar.us/water/tmdls/default.aspx#Display>.

¹³ See the Nonpoint Source Pollution Management Plan.

¹⁴ See the Arkansas Watershed Steward Handbook.

This fact sheet is one in a series of 10 fact sheets on nonpoint source pollution in priority watersheds.

Authors: **AMANDA PHILYAW PEREZ, MPH**, program associate, and **KRISTIN HIGGINS**, program associate, and **MICHAEL FREYALDENHOVEN**, program technician, Public Policy Center, University of Arkansas Division of Agriculture, Little Rock.

The University of Arkansas Division of Agriculture's Public Policy Center provides timely, credible, unbiased research, analyses and education on current and emerging public issues.