



Welcome to Autumn!



STREAM LINE

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A PUBLICATION OF THE **KINGS RIVER WATERSHED PARTNERSHIP**

EPA WRITING PLAN FOR OSAGE CREEK

The Environmental Protection Agency has contracted to have a TMDL written for Osage Creek in the Kings River Watershed. TMDL stands for Total Maximum Daily Load and is the maximum amount of a pollutant, in this case Total Phosphorus, that a stream segment can assimilate without causing impairment. A TMDL will locate the sources of the pollutant, calculate how much of the load each source has been and should be contributing, and then outline a plan for both the point and non-point sources to reach the established water quality standards. Although state agencies are technically supposed to write TMDLs for streams and lakes that are "impaired", the EPA assumes the responsibility if the state does not do it.

Osage Creek has never been listed on the impaired waters list by the Arkansas Department of Environmental Quality. The EPA decided to override ADEQ's decision by placing Osage Creek on the Final 2002 Impaired Waters list for the State of Arkansas because of Total Phosphorus loads. EPA asserts that the listing was made based on a "review of these comments [State of Missouri] and phosphorus measurements in streams in Arkansas that flow into Table Rock Lake.... Average total phosphorus (TP) concentrations in this reach are approximately 16 times greater than the Arkansas guideline value and are much greater than those in other streams in the region such as the upper reach of Osage Creek (045-U) and the Kings River."

The State of Arkansas, like the majority of states in the U.S., does not have a numeric standard for Total Phosphorus. Instead, it has a narrative criteria which states that a combination of factors, such as the natural waterbody characteristics, the presence of an objectionable level of algal growth, water clarity, periphyton production, dissolved oxygen fluctuations, and others will be used to determine if a stream is impaired by nutrients. The Arkansas guideline value mentioned above was previously 0.1 mg/L Total Phosphorus, but it has since been removed from Regulation 2. In order to avoid the type of litigation currently occurring in the Illinois Watershed, the KRWP is facilitating an information exchange with the State of Missouri and encouraging sound science to be the basis for all decisions made.

In the case of Osage Creek, the TMDL will most likely result in a maximum load standard for Total Phosphorus Load in the effluent of the Berryville Waste Treatment Plant. The City of Berryville is already working to reduce phosphorus in its effluent. The TMDL will also probably include recommendations to reduce non-point source pollution from fields, county roads, and streambanks; but these that cannot be regulated. Before the TMDL is finalized it will be posted on the EPA website for public comment and review. If you are interested in this process, please visit <http://www.epa.gov/Arkansas/6wq/artmdl.htm> or call Philip Hutchison from EPA Region 6 at (214) 665-6723.

ROUNDTABLE WRAPS UP SUB-GROUP MEETINGS

After a total of fifteen planning meetings involving more than sixty people in four sub-groups (Urbanizing, Agriculture and Rural Land Issues, Onsite Waste Treatment, and Education), the Roundtable is finally wrapping up its planning phase. Each sub-group created and prioritized a list of action items and potential partners for their specific topic. In keeping with the mission of the Kings River Watershed Partnership most of the action items involve education initiatives, expanding the base of scientific data, coordinating information exchange between groups working in the watershed, and providing financial assistance to sup-

port community projects that will improve water quality.

The complete list of action items will be sent out to all members and Roundtable participants for their review, updates, and approval. If you would like to receive a copy of the action items, please contact Shawna Miller at (479) 981-1172.

The Partnership would like to sincerely thank all the folks that gave us input during this planning process. We look forward to working with you on many many projects in the future!



Hey Kids! Can you name the creatures that you see in the pictures above?



KINGS RIVER
WATERSHED PARTNERSHIP

WATER QUALITY MONITORING REPORT

BY SAM DAVIS

The monthly KRWP water quality testing of eleven different chemical and physical measurements continues. Each test tells us something about the current state of water quality. One of these is Total Dissolved Solids (TDS).

There are two forms of solid material carried by surface water, suspended and dissolved. Suspended solids affect the clarity of water. Suspended solids include silt and clay particles, plankton, algae, fine organic debris, and other particulate matter. Sources of these particles are sedimentation from stream bank erosion, county roads and ditches, agricultural land use, real estate development, construction sites, and urban storm water runoff. An excess of suspended solids in a stream can cause a decrease in the passage of light through water, which slows photosynthesis by aquatic plants. Water will heat up more rapidly and hold more heat; which might adversely affect aquatic life that requires lower temperatures.

Dissolved solids are much smaller in size and include phosphorus, nitrate, calcium, iron, and other ion particles. Sources include wastewater sewage treatment discharge, decayed plant and animal matter, septic tanks, agricultural practices, and runoff from urban lawns. The amount of total dissolved solids tends to increase during the summer when water levels are low and current is slow or when stagnant pools are isolated in a stream.

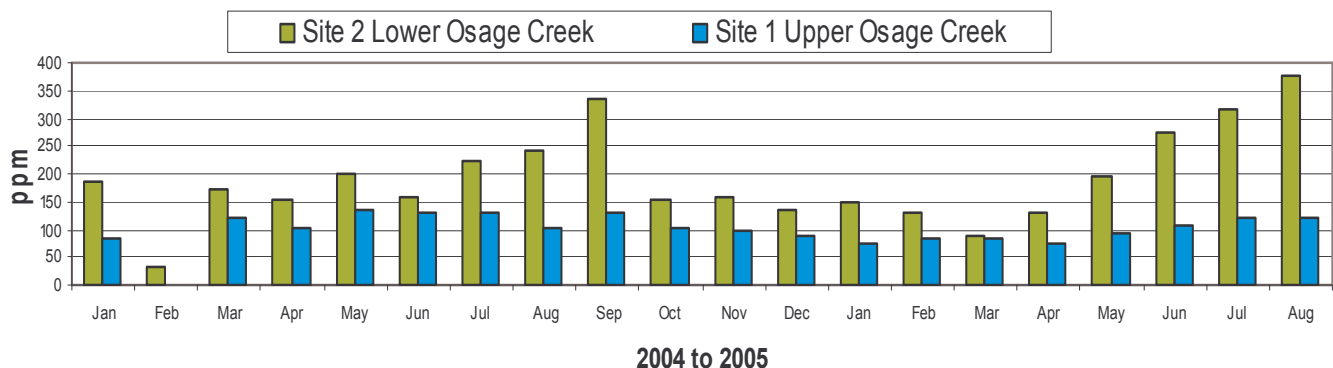
As water moves over rocks, soil, and through the atmosphere, many materials are dissolved and carried away. The water that you see in our local streams flows upward from groundwater

	Month	Stream Depth (ft)	Dissolved Oxygen (mg/L)	Nitrates (mg/L) NO 3- -N	Phosphorus (mg/L) Reactive	Total Dissolved Solids (ppm)
Site 1- Upper Osage @ CR 7051' above Berryville	June	5.2	7.7	0.7	0.37	105
	July	3.6	7.2	0.6	0.40	120
	August	3.6	7.0	0.6	0.47	119
Site 2- Lower Osage @ CR 306 below Berryville	June	1.7	7.7	0.6	2.89	274
	July	1.1	7.2	0.7	1.86	317
	August	1.0	8.0	1.6	1.97	376
Site 3- Kings R. just above Osage confluence	June	1.0	7.3	0.6	0.26	118
	July	0.7	6.2	0.8	0.21	132
	August	0.8	7.5	0.9	0.55	120
Site 4- Upper Kings, Hwy 74 bridge south of Kingston	June	3.3	8.3	0.8	0.21	113
	July	1.9	6.6	0.5	0.26	80
	August	1.5	6.8	0.9	0.17	87
Site 5- Kings R. at Stoney Pt. below Grandview	June	2.6	8.3	0.6	0.33	152
	July	2.6	9.8	0.6	0.77	163
	August	2.6	7.8	0.2	0.60	164
Site 10- Keel's Ck. .5 miles above Kings R. Confluence. CR 329	June	1.6	8.9	0.6	0.38	157
	July	0.3	6.6	0.6	0.26	196
	August	0.0	0.0	0.0	0.00	0
Site 11- Kings R. at Rockhouse Access	June	1.6	8.1	0.8	0.31	109
	July	0.7	7.4	0.6	0.47	115
	August	0.7	6.6	0.3	0.16	110

through springs, downward from rainfall draining off sloping land surfaces, and through the caves, sinkholes, and fissures that make up the limestone geology of our area. (Check out an interactive movie on karst topography at www.watersheds.org/teacher/rd.htm)

A constant level of minerals in the water is necessary for aquatic life. However, too great an amount of TDS-one indication of a high concentration of nutrients, can upset the balance by promoting excess algae growth. The sunlight needed by submerged plants becomes blocked. When bacteria decompose dying algae, they use up valuable oxygen. Aquatic insects dwelling on the stream bottom that gather, filter, and shred organic matter; as well as the crayfish, snails, and smallmouth bass that depend on them for food need this oxygen. Everything in a stream depends on everything else.

Total Dissolved Solids



REDUCING COSTS, REDUCING RUN-OFF GO HAND IN HAND

Water movement is one of the primary factors that will determine the success or failure of a county road. Today designers and maintenance crews not only have to consider the effect that water will have on their road, but also must account for the effect that their road will have on the water. Unpaved roads have the potential to be a significant source of suspended sediment. The Kings River Watershed has an estimated 919 miles of unpaved roads. The relative contribution of sediment from roads and ditches is 11.90% of the total sediment load, about 16,079 tons per year.



Most folks living in a rural area would not argue that roads are a necessity to daily living. However, unpaved roads can be built and maintained in a way that will reduce their impact on water quality as well as decrease the frequency of repairs, thus saving thousands of county dollars. This was the main focus of a Roads Workshop held July 26 in Berryville Arkansas. Attendees, including Carroll County Judge

Ulys K. Smith, Road Foreman Wendell Coatney, and Road Crew Leader Jim Kelly, spent two days listening to presentations demonstrating the installation of turnouts, riparian areas, water bars, roadside ditches, culverts, low-water crossings, and sediment traps to reduce surface erosion and sediment loads.

The Rural Roads Workshop was the follow-up to a survey and assessment of unpaved roads in the Dry Fork Creek sub-watershed completed this summer by the Watershed Conservation Resource Center. The Center developed a GIS based inventory of every unpaved public road, estimated the amount of sediment reaching streams from the road segments, and recorded the general condition of the road. The Center also identified priority road segments and presented general recommendations for the implementation of best management practices.



The improvement of unpaved roads might begin with the County Road Department, but it certainly does not end there. In many instances the road crew would like to properly install a turn-out or sediment trap, but are restricted by uncooperative property owners. Many folks simply do not want the stormwater runoff to be running onto their property. Please remember that the best way to reduce sediment loads and protect the integrity of the road is to direct the water into riparian areas as often as possible. This simple measure will reduce the water's velocity, force it to drop the sediment that it carries, and allow it to soak into the ground where it will be naturally

RAINING THROUGH THE CONCRETE

New stormwater regulations in cities nation-wide require builders to mitigate run-off coming from impervious surfaces, i.e. standard concrete or asphalt pavements. In most cases this means that the developer is forced to leave room for retention ponds or other riparian areas; a potentially expensive proposition. Pervious concrete has been used in the southern states to mitigate stormwater from parking lots and other paved areas for over 25 years.

The Arkansas Ready-Mix Concrete Association and Eureka Springs Parks Commission joined forces to host a seminar concerning pervious concrete and its potential uses in our area. Pervious concrete, which is about 25% air, allows up to 5 gallons per square foot per minute of water to pass through it. If laid correctly it offers over 2000 psi strength and has many

advantages for the environment. It acts as a filter, capturing oil and other pollutants, it helps recharge groundwater supplies, it reduces the need for irrigation to islands, and water reaching streams is cooler and cleaner. In addition, pervious concrete eliminates hydroplaning because water does not sit on the surface, the reason that it has been successfully used on landing strips and walking paths. It has definite environmental advantages over asphalt, which accounts for 90-95% of hydrocarbons in urban run-off because of the binder and sealer used. With proper training, any Ready-Mix provider can make and set pervious concrete. For more information about potential applications, local projects, costs, providers, weather implications and all other questions, visit www.trmca.org or www.nrmca.org.

The KRWP would like to thank the Carroll Electric Cooperative for printing this newsletter free of charge. This publication would not be possible without their generous gift.



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The Kings River Watershed Partnership is a cooperative effort, organized exclusively for charitable, scientific, and educational purposes; more specifically to protect the health, purity, and economic viability of the Kings River watershed, now and for future generations.

Founded in 2001, the Partnership strives to represent a broad range of watershed stakeholders, primarily utilizing voluntary management improvements and collaborative agreements to protect and enhance water resources.

In October of 2004, the Kings River Watershed Partnership became a certified 501 (c)(3) non-profit organization. Feel free to give generously; your gifts are now tax-deductible!

Looking for more information?

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HONEY, I POISONED THE KIDS!

BY MIKE FITZPATRICK

You probably wouldn't drive the kids to school in a vehicle with bald tires. And you would think twice before serving them hamburger that was growing green mold. But how about the septic tank under the grass? Why worry about stuff you can't see?

Three recent studies of water systems in NW Arkansas and SW Missouri came up with figures of 43%, 40% and 24% for the failure rate of domestic septic systems; not because they were badly designed or incorrectly installed but because they were neglected by their owners. So let's guess that 33% is a reasonable figure for failed septic systems in our area.

If you and the neighbors on both sides of your property are

on septic systems, odds are that ONE of you has a failing septic. And if none of you have that problem then probably TWO of the folks across the road are polluting the neighborhood. And it matters! Sewage that does not settle in the holding tank flows into the filter lines that were designed to handle only grey water. Grass and vegetation flourish. Wild life thinks it's party time. People get sick and die!

Replace those bald tires. Throw out the green hamburger meat. Call the septic tank cleaning company and get a 5-year inspection. Maybe do a deal with the inspection company to check all 6 of the septic systems of your friends and neighbors for a special price. Can't be bad.