ETB259

An Assessment of Storm Water Runoff Issues in Pine Bluff, White Hall, the University of Arkansas at Pine Bluff and Jefferson County

School of Agriculture, Fisheries & Human Sciences

Cooperative Extension Program,
University of Arkansas at Pine Bluff,
United States Department of Agriculture,
and County Governments Cooperating

An Assessment of Storm Water Runoff Issues in Pine Bluff, White Hall, the University of Arkansas at Pine Bluff and Jefferson County

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Cover Picture: Lake Saracen is one of the local lakes that receive storm water runoff from Pine Bluff and surrounding areas.

Introduction

Small municipalities and urbanized areas are required to implement programs and practices that control polluted storm water runoff under the U.S. Environmental Protection Agency (EPA) Storm Water Phase II Final Rule. Storm water runoff is water that runs off impervious surfaces such as parking lots, paved streets and residential driveways and flows into the storm drain system and eventually to nearby surface waters. Storm water runoff picks up pollutants such as oil and grease, harmful bacteria, toxic chemicals and excess nutrients as it travels. These pollutants are potentially harmful to people, terrestrial and aquatic wildlife and their habitats.

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Pine Bluff, White Hall, the University of Arkansas at Pine Bluff (UAPB) and Jefferson County are included in the areas regulated by the Storm Water Phase II Final Rule. The University of Arkansas Division of Agriculture, Cooperative Extension Service, is assisting Pine Bluff, White Hall, UAPB and Jefferson County with sections of their Phase II requirements. These requirements include:

1) public education and outreach,
2) public participation and involvement and
3) pollution prevention/good housekeeping (EPA, 2000).

To gauge the level of local awareness regarding storm water runoff, the UAPB Regulatory Science Center, in conjunction with the University of Arkansas Cooperative Extension Service, conducted a mail survey of the Pine Bluff, White Hall and Jefferson County areas. The results of the survey will be used to assist the Jefferson County Extension Service and local municipalities with their storm water runoff public education programs.

The overall goal of the survey was to assess the public's level of knowledge regarding urban storm water runoff issues in the Pine Bluff, White Hall and Jefferson County areas. This assessment is significant because urban areas within Jefferson County fall under the authority of the Storm Water Phase II Final Rule (Federal Register, Vol. 64, No. 235; Section 402(p) Clean Water Act). Regulated municipalities and urban areas covered under the Phase II Rule will be required to fully implement their storm water management programs by the end of the first permit term (typically a five-year period) (EPA, 2000).

Phase II Final Rule

The Phase II Final Rule was established by the U.S. Environmental Protection Agency (EPA) to preserve, protect and improve the nation's surface waters from polluted storm water runoff. The Phase II Rule expands the Phase I Rule by requiring additional MS4s (areas with a population density of at least 1,000 people per square mile) to apply for National Pollutant Discharge Elimination System (NPDES) general permits and implement storm water discharge best management practices (BMPs). More specifically, small MS4s must:

1) develop, implement and enforce a storm water management program designed to reduce the discharge of pollutants, protect water quality and satisfy the water quality requirements of the Clean Water Act (CWA; 101 Stat. 7);

2) design the storm water management program to include public education and outreach, public participation/involvement, illicit discharge detection and elimination, construction site runoff control and pollution prevention/good housekeeping; and

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A local storm drain after heavy rainfall.

3) identify its selection of measurable BMP goals and provide periodic reports to the Arkansas Department of Environmental Quality regarding progress toward these goals (EPA, 2000).

Survey

The UAPB Regulatory Science Center worked closely with University of Arkansas Extension personnel to develop an urban storm water runoff survey instrument targeting the Pine Bluff, White Hall and Jefferson County communities. Survey packages were mailed January 23-24, 2007, and contained a cover letter and a numbered survey. The survey consisted of 43 questions designed to gauge the community's knowledge of storm water runoff issues, household activities that may affect local surface water quality and the current state of local surface water quality.

Results

A total of 1,116 surveys were mailed: 381 to Pine Bluff, 357 to White Hall and 378 to Jefferson County households. An overall total of 297 surveys were completed and returned with 52 surveys returned by the

Postal Service due to lack of forwarding addresses. The overall response rate for this survey was 27 percent with no incentive for survey participation offered. Forty-seven percent of the respondents were from Pine Bluff, and 32 percent were from White Hall. The remaining respondents were from Jefferson County and surrounding areas (21 percent). Less than 0.5 percent of the respondents were younger than 25 years old, while the majority (45 percent) were 55 to 74.

Almost half of the respondents, regardless of age, indicated that runoff water from their lawns was absorbed into the ground (46 percent) or that a combination of ground absorption and storm drains (37 percent) was where runoff water traveled. However, the majority of respondents were neutral regarding the impact of rainwater runoff from their lawns and gardens (40 percent), hosing debris from driveways (39 percent) and soil erosion from home and garden projects (38 percent). Respondents agreed to a lesser extent that the above-mentioned items had an impact on local water quality (33 percent, 29 percent and 30 percent, respectively).

The majority of respondents indicated that specific surface waters such as Bayou Bartholomew and Lake Pine Bluff had fair to poor water quality.

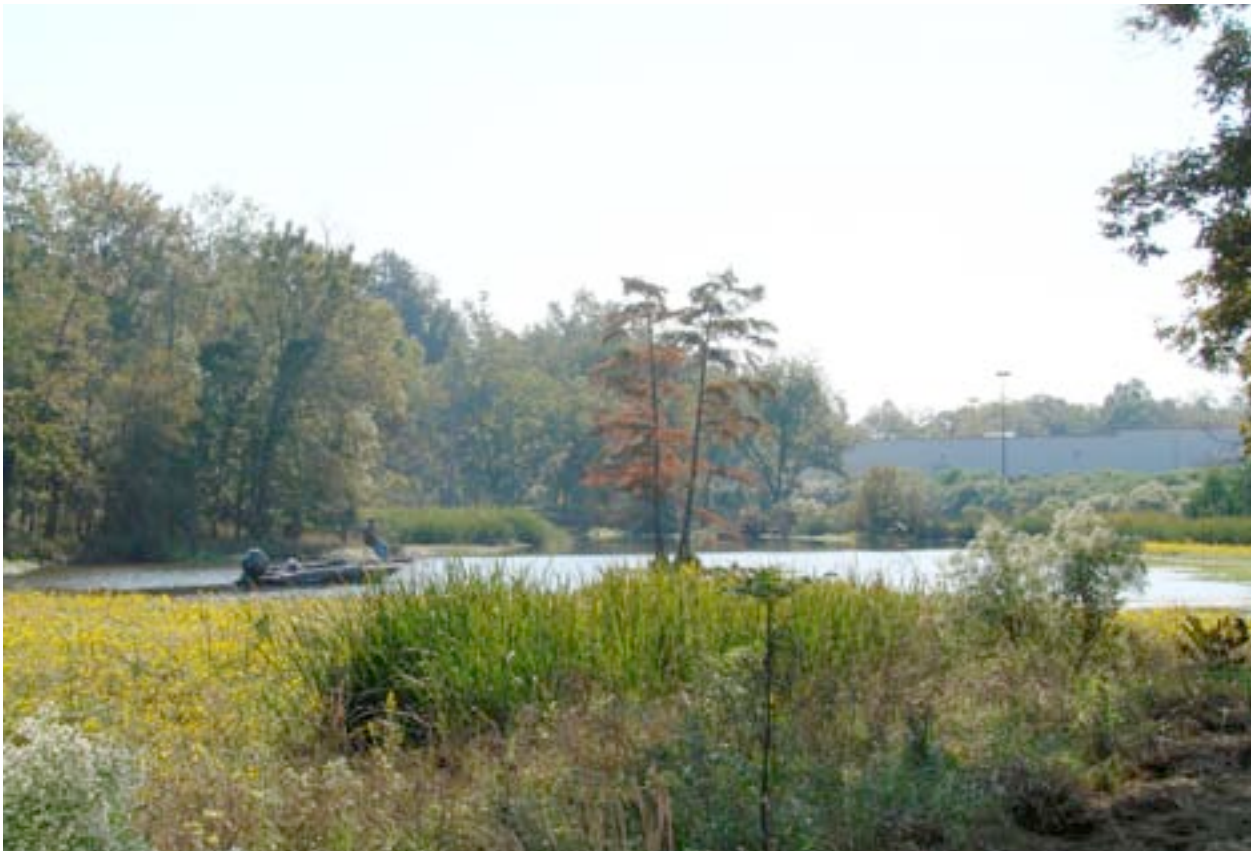
When asked about local surface water quality, 34 percent responded that they were not sure about the quality, 31 percent responded that the quality was about the same as five years prior and 28 percent responded that surface water was more polluted than five years prior. Only 7 percent responded that there was less pollution than five years prior in local surface water. The majority of respondents indicated that specific surface waters such as Bayou Bartholomew and Lake Pine Bluff had fair to poor water quality. Respondents with less education rated Bayou Bartholomew and Lake Pine Bluff water quality lower than respondents with higher levels of education.

More than 90 percent of respondents used pesticides on their lawn, indoors or in their gardens, with 77 percent personally applying the pesticides. Of

those who personally applied the pesticides, 96 percent reported that they followed the recommended application rates. More than half (53 percent) responded that it was very important to keep their yards free of bugs.

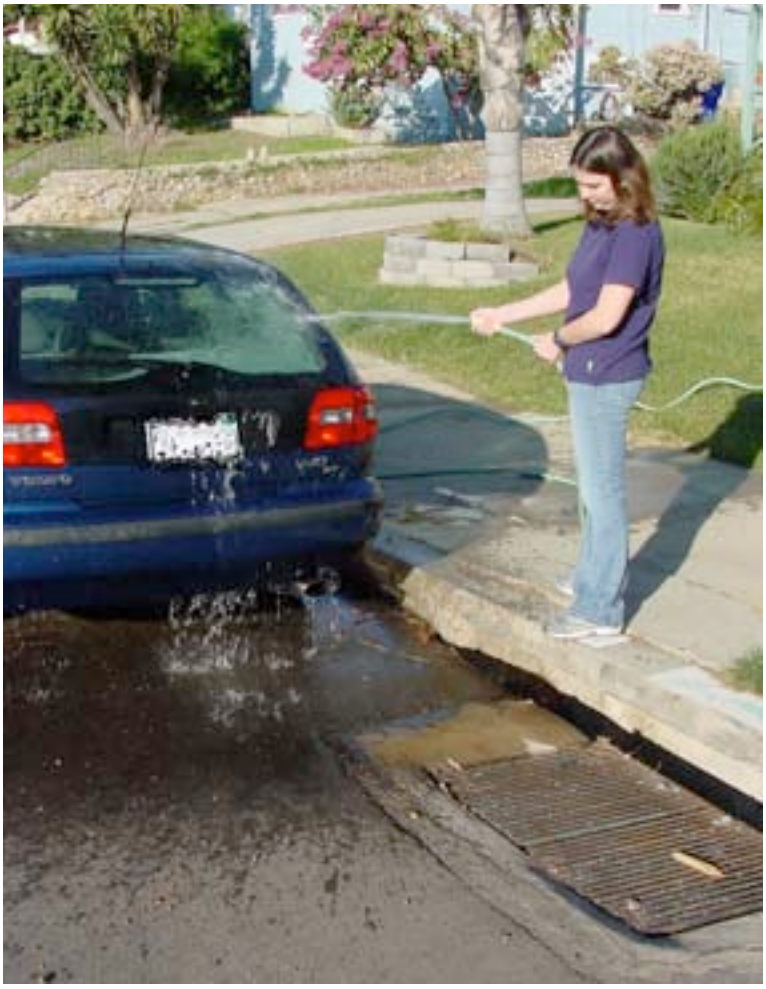
More than 70 percent stated that it was either very important or somewhat important to keep their yards free of weeds. Most respondents, regardless of age, stated that they controlled weeds by pulling them by hand (38 percent), 36 percent responded that they only treated problem areas and 22 percent applied herbicides. Respondents with some college, vocational training or graduate/professional degrees were more likely to use a professional service to treat their lawns than those with less education. Over half of the households surveyed fertilized their lawns twice a year or more (58 percent), and the majority followed the application directions (96 percent). However, grass clippings from almost two-thirds of household lawns were never or only sometimes collected. Almost half (44 percent)

Bayou Bartholomew is one of the local streams that receive storm water runoff from Pine Bluff and surrounding areas.



of the respondents had at least one or more dogs, and 68 percent of them disposed of dog waste in the yard. Of respondents who walked their dogs, 23 percent left their pet's waste on the street or on the ground.

Fifty-seven percent of households surveyed washed their cars at home at least once a month, with 80 percent of the cars being washed in their driveways. Conversely, 89 percent of respondents stated that they did not work on their cars at their residence, which included changing the car's oil and antifreeze. Most (87 percent) stated that they did not change their oil, and 90 percent did not change their antifreeze. Of those who changed their oil and antifreeze at their residence, 1 and 2 percent, respectively, dumped these toxic substances on the ground or street.



Washing a car on an impervious surface (near a storm drain) contributes to storm water runoff pollution.

What Does This Mean?

Surface waters are the final destination for storm water runoff. Bayou Bartholomew and Lake Pine Bluff are examples of where our storm waters travel. Storm water runoff in Pine Bluff, White Hall, UAPB and Jefferson County is not treated before it is discharged to surface waters and may contain pollutants, such as oil and grease, harmful bacteria, toxic chemicals and excess nutrients (i.e., nitrogen and phosphorus), which are all harmful to people and aquatic environments.

Chemicals such as herbicides and pesticides are particularly harmful to aquatic life and aquatic environments. All chemicals and fertilizers should be used according to their intended purpose and always according to label directions. Chemicals and fertilizers should not be applied immediately after a rain. Pet waste contains bacteria, viruses and excess nutrients that can contaminate surface and ground water. Pet owners should dispose of their pet's waste in a garbage can or toilet.

Washing cars at home often uses more water than a commercial car wash and can release oil and grease into runoff water. Commercial car washes filter, clean and recycle wastewater in many cases and are required to dispose of wastewater at a treatment facility. If washing your car at home cannot be avoided, wash less often, use a biodegradable, environmentally friendly soap and wash it on the lawn so that waste water can soak into the ground.

Hosing debris from driveways and soil erosion from home and garden projects may not seem like big issues when only one person does them, but the real problem is the cumulative effect of a large community doing these activities. The cumulative amount of sediment and debris damages surface water quality and aquatic habitats. These activities cause problems for others downstream and away from our communities. The bottom line is this is just not the neighborly thing to do.

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Acknowledgments

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For more information, visit the following:

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