THE WATER LINE

Newsletter for the Lakes of Missouri Volunteer Program

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Non-Point Source Pollution Part 2: Urban Influences

In the last issue of *The Water Line* we introduced the topic of Non-Point Source (NPS) pollution. To briefly review, NPS pollution comes from many diffuse sources. As water from rainfall, snow-melt or irrigation moves over and through the ground, it picks up and carries a wide variety of pollutants. The water, along with the pollutants, can end up in our lakes, rivers, wetlands, oceans and even our groundwater. Many factors contribute to NPS and in part two of this series, we focus on urban sources of NPS pollution and some solutions.

As forest, grasslands, and wetlands are increasingly being converted to parking lots, rooftops and roads, we are reducing our environments ability to soak up rainfall (and snow-melt). This decrease in infiltration is a double-edged sword. First, less infiltration means more water stays on the surface. Secondly, less soil-water contact equates to less water being stored in the soil. Both of these factors translate to more water moving as runoff from a given area. (To simplify things, we'll use the term runoff to refer to water that is moving both across the surface and through the soil.)

Lake St. Louis - St. Charles County, MO

Think about the average downtown area or high density subdivision. There is a lot of surface area that is not permeable. In fact, in some city settings one may have a hard time finding a permeable surface other than cracks in the sidewalk!! All of these hard surfaces mean that the vast majority of the water that falls as rain will become runoff. This runoff picks up pollutants as it moves down our driveways, through the streets, and across the parking lots. Some of these pollutants include oil, grease, and antifreeze from automobiles as well as salt, cinders, and trash from road surfaces. (Continued on page 3)

LMVP Coordinators

Fran Pope - popef@missouri.edu
Dan Obrecht - obrechtd@missouri.edu

302 A.B. Natural Resources Bldg
University of Missouri
Columbia, MO 65211

1-800-895-2260

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ON THE ROAD (WHERE WE'VE BEEN)

Anyone who tried to contact the LMVP during the beginning of November may have had trouble reaching us. We were out of the office as we took the Fran and Dan show on the road to three different conferences in three different states.

We started off in Mountain Home, Arkansas for the second White River Basin Forum on November 1st and 2nd. This meeting between Arkansas and Missouri focused on the cooperative efforts that will be required by the two states to address water quality issues in the White River Basin. Stakeholders in attendance included government officials, agency personnel, researchers, local business owners, and other concerned citizens.

The first day included reports from both states on important issues, presentations on current water quality topics, and lessons learned from other watersheds. The second day of the conference saw attendees focus on two different, but equally important themes. Some attendees met to discuss specifics concerning the watershed and the unified effort to protect it. The rest of the conference participants took part in a technical session. This session allowed attendees to learn about current research in the watershed. The LMVP was there with a presentation and a poster.

The 3rd and 4th of November was spent in Lawrence, Kansas for the Great Plains Limnology Conference. The LMVP did not present, but did hear a number of talks on lake ecology and water quality issues.

The road trip ended with the North American Lake Management Society in Miami, Florida on November 8th -10th. This conference offered an extremely wide variety of topics including: Lake Management, Managing Water Resources, Aquatic Plants, Lake Restoration, Algal Blooms, Recreational Issues, and Watershed-Waterbody Connections. The LMVP gave a poster presentation on the program and some of our successes.

These conferences not only provide us with a chance to educate people about our program, but a chance to learn from others. What we get out of these conferences is well worth the time spent on the road.

CONFERENCE ANNOUNCEMENTS

April 17-20, 2001 - The 14th Annual National Conference: Enhancing the States' Lake Management Programs in Chicago, IL. The title (and focus) of this year's conference is *Integrating Nonpoint Source Watershed Management with Lake Management and Protection*. It is a very casual conference that is aimed at lake associations as much as agency personnel or scientist. It is a great place to meet others who care about lakes and learn from their experiences. For more information contact the LMVP or go to the North American Lake Management Society's (NALMS) web page at www.nalms.org.

November 7-9, 2001 - The 21st Annual NALMS International Symposium, this year in Madison, WI. The focus for this years symposium is *Bridging the Gaps between Science, Policy and Practice* (i.e. How to take sound science, make good policy and get results!) This conference draws participants from around the world and will have presentations on a wide variety of topics. Some of the topics may not have mass appeal (paleolimnology, biomanipulation) but other themes (grassroots education, economic value of lakes) will ensure that there is something for everyone. Currently there is limited information about this conference on the NALMS web page. As the conference approaches more information will become available.

NPS Pollution - Urban Influences (continued from page 1)

Urban areas can also contribute the type of pollutants that the Lakes of Missouri Volunteer Program is interested in monitoring. When buildings, parking lots, and roads are being built, the first step is usually a clearing of the vegetation. Anytime vegetation is removed there is an increased potential for soil erosion. Erosion from construction sites can contribute large amounts of soil materials and nutrients (that are bound to the soil) to the runoff coming from urban areas.

In urban areas, runoff is generally funneled into storm sewers where it is transported out of town (out of sight, out of mind?). A storm sewer may transport an amazing amount of runoff from a rain event. The end of the storm sewer often feeds into a stream where the addition of extra water may cause stream bank erosion. Streams develop by moving only the water that comes from its natural watershed. An increases in water volume upsets the natural balance of the system. The result is a stream that will erode its banks. Urban runoff can, in effect, cause erosion problems miles away from the city.

So what are some of the solutions to these problems? Solutions come in two forms: 1) reduce runoff and 2) reduce the pollutants that the runoff transports.

Reducing runoff can be accomplished by increasing infiltration. This translates to more permeable surfaces such as lattice styled walkways instead of the usual concrete sidewalk or a wood deck instead of a concrete pad. The inclusion of green areas in urban settings can also reduce runoff by increasing infiltration. Cities that are developing should include these green areas in their long term growth plan. Older cities should look for opportunities to replace non-permeable surfaces with green space. (Go to www.epa.gov/owo/nps/bioretention.pdf for a look at experiments on reducing NPS pollution coming off of parking lots.)

Infiltration can also be increased by funneling runoff into green areas instead of storm sewers. This can be as simple as aiming your down-spouts into the yard and not down the driveway. Water in a green area has a chance to infiltrate the soil, water in a concrete tube doesn't.

There are other ways to reduce runoff. Don't water your driveway! When you use a hose to spray the driveway clean you are creating runoff that is probably going straight into the storm sewer were it can only add to the problem. Washing your car? Do it in the yard, not the driveway. Other solutions are the incorporation of retention ponds in subdivision designs and vegetative buffers that can slow runoff down, giving it a chance to infiltrate.

Reduction of the pollutants that might be carried in runoff can be achieved by making sure our vehicles are not leaking. The small puddle of oil in the driveway may not look like much, but think about the oil that drips onto the road while you drive. Now multiply all that by the number of cars that have small oil leaks. It adds up very quickly. You can also reduce NPS pollution by not dumping any household chemicals out in your yard or driveway. Another great way to make a difference is to become involved in the decision making process. Urge city and county officials to not over apply cinders and salt during the winter. Encourage the development of erosion/sedimentation controls in your community.

These are some of the Non-Point Source Pollution problems associated with urban areas and some solutions. In the next issue of *The Water Line* we'll focus on problems and solutions associated with individual households. Remember, if you aren't part of the solution then you are part of the problem!

FIELD STATION TO PROMOTE RESEARCH AND EDUCATION

Environmental research can be conducted almost anywhere, but some of the most important (not to mention extensive) research comes from established University field stations. Field stations are unique in that they offer a place where research and education can come together. A setting where students and teachers can interact with nature and each other.

Recently a field station has been established on Bull Shoals Lake in Southwestern Missouri. The station is under the direction of Dr. John Havel of Southwest Missouri State University. The field station's mission is to conduct research and educational programs that promote public awareness of the ecology of Southwest Missouri and the Ozark region. The station was established in 1999 and operates as a partnership among Southwest Missouri State University, the Missouri Department of Conservation and the U.S. Army Corps of Engineers.

The field station is located on five acres in Taney County and is surrounded by the 6,000 acre Drury-Mincy Conservation Area. Currently the site contains a beautiful stone house built in 1924 by Frank Drury along with several outbuildings. Plans include renovation of the Drury home, as well as construction of cabins, classrooms and research labs.

To learn more about the field station visit the web site www.cnas.smsu.edu/bullshoals or e-mail questions and comments to bullshoals@mail.smsu.edu. The field station offers researchers, students and Missouri citizens an incredible opportunity to learn more about the beautiful Ozarks.

DATA REVIEW SESSIONS!!!

It is getting to be that time of year again when we head out to the different regions of the state to do Data Review Sessions. If you have any thoughts about when, where, and how we should do the review in your area, let us know. We are always looking for any help we can get in terms of reaching the most people with the information you help collect. Phone, mail or email your ideas and thoughts in.

Region VII, U.S. EPA, through the MODNR, has provided partial funding for this project under Section 319 of the Clean Water Act.

The Lakes of Missouri Volunteer Program is also sponsored by the University of Missouri.

LAKES APPRECIATION WEEK

JULY 1-8, 2001

North America has more lakes and a greater surface area of lake water than any other continent. Lakes are used for a wide range of purposes including: drinking water supply, industrial and agricultural use, flood control, boating, swimming, fishing, skiing, diving, wildlife habitat, and aesthetic enjoyment. Lakes are used in many ways but are still an under appreciated resource.

The idea behind Lake Appreciation Week is to draw attention to the value and importance of lakes and reservoirs. Along with making people aware of the benefits of lakes, it is important to educate them about the threats to lake water quality. Most of our lakes and reservoir suffer from at least some impairment with a fair number being polluted enough to impact human uses.

Lake Appreciation Week corresponds with the Fourth of July in America and with Canada Day (July 1) making it truly a North American event. What better time to appreciate our lakes than summertime, when we are benefitting from the recreational opportunities they provide. Lake Appreciation Week also corresponds with the Great American Secchi Dip-In.

If you are interested in celebrating Lake Appreciation Week and would like ideas on how to get your lake association or community involved, check out the North American Lake Management Society's web page (www.nalms.org). Click Lake Appreciation on the menu to get ideas how to celebrate and how to make headlines with your celebration. Let us know if you plan anything for the week. We will do what we can to help your cause.

LAKE FACTS

- **There are over 41 million acres of lakes and reservoirs in the U.S.**
- **There are approximately 100,000 lakes larger than 100 acres in the U.S. (Excluding Alaska, which has several million)**
- **Americans make over 1.8 million trips to their favorite water destinations (beaches, rivers and lakes) each year.**
- **According to U.S. EPA's National Water Quality Inventory, 1996 Report to Congress, 39% of surveyed lakes are impaired by pollution**
- **Agricultural runoff, sewage treatment plants and urban**