

The Water Line

Volume 7

Number 2

Spring 2003

First-ever LMVP conference a success!

Over 50 people took time on Saturday, March 29th to take part in the first Lakes of Missouri Volunteer Program Water Quality Conference. The day included presentations on a number of topics, awards and an appreciation banquet for the volunteers. The event was a chance for volunteers to hear discussions concerning watersheds and lake ecology. What follows is a list of presenters, their talks titles, and a quick summary of how it relates to water quality.

Judy Allmon of Grow Native! presented *Promoting Naturally Resilient Plants for Naturally Beautiful Landscapes*. Native plants are adapted to the conditions in Missouri and therefore require less watering (conservation), pesticides, and fertilizers (potential nonpoint source pollutants) than non-natives. Native plants can also help slow the movement of water during a rain. This translates to less runoff and therefore less erosion problems that can have negative impacts on your lake. Along with these benefits to water quality, native plants can increase the beauty of your yard while attracting birds and butterflies.

Dan Downing from the University Extension Services presented *Grassroots Comprehensive Watershed Planning*. Lake water quality is determined by the activities that occur in the watershed. Long-term solutions to water quality problems require actions to be taken in the watershed. There are three lines of action

that can be followed: proactive, reactive, and, no action.

Charles Laun from the Boone County Stormwater Task Force presented *The EPA and Stormwater*. An increase in the amount of rooftops, roads and parking lots means a decrease in the permeable surfaces within a watershed. This leads to an increase in the amount of rain water that will move across the surface instead of soaking into the ground. This increase in stormwater can have negative impacts on our lakes as the potential for erosion increases. Runoff from roads and parking lots can also carry pollution into our waterbodies. Limiting urban sprawl and leaving more permeable surfaces can help control the stormwater problems.

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Thank You!

The following businesses helped sponsor the LMVP conference by providing goods or services at no cost.

The Alpine Shop

(www.alpineshop.com) for supplying door prizes. The Alpine Shop, with stores in Kirkwood, Chesterfield and Columbia, offers clothing and gear for the outdoor enthusiast.

The Artist's Hand Calligraphy

(www.theartistshand.com) for providing calligraphy for the banquet invitations. The Artist's Hand provides calligraphic services for all occasions.

LAKES OF MISSOURI VOLUNTEER PROGRAM

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Dance Concepts Inc. presented *A Single Drop of Water*. The young ladies from this dance company performed a creative dance presentation about water and its connection to life. Education is the key to reducing nonpoint source pollution and this novel approach reaches out with a historical review of the Clean Water Act as well as tips on how individuals can become part of the solution instead of being part of the problem.

Jackie Seigal from GeesePeace of St. Louis presented *GeesePeace: Humane Solutions for Problems with Urban Canada Geese*. Goose-human conflicts have increased due to the overabundance of Canada geese in some areas of the state. GeesePeace promotes humane approaches to dealing with the problems. Solutions include population control through egg oiling, behavioral modifications and landscape modifications to make lawns less inviting.

Jack Jones of the University of Missouri's School of Natural Resources presented volunteer data that revealed trends in lake water quality across the state. Water quality parameters can vary within a season in a lake, among years in a lake, and between different lakes in the state. These differences are due to a number of reasons including climate, soil type, and lake size and shape, though data suggest that it's the way humans use the land that can have the greatest impact on water quality.

Becky Shannon from the Missouri Department of Natural Resources discussed the utility of data generated by LMVP volunteers. The LMVP has been in existence since 1992. During this time, the volunteers have helped collect a large amount of data regarding Missouri lakes. If not for the volunteer effort, this data would probably not have been collected. Besides helping the DNR track lake water quality, the volunteer data helps the state meet its requirements as set forth in the Clean Water Act.



The Lakes of Missouri Volunteer Program would like to formally thank the following volunteers who have been dedicated to clean lakes for several years.

5 Year Volunteers

Dave and Mitzi Chase
Charles Chrstrup
James Civiello
Wayne Clark
Mike Diel

Armand Mathews
Glenn and Donna Mulkey
Ken Paydon
George and Wilma Penfield
Robert Perkins
Bill Shour
Denny and Dottie Slay

10 Year Volunteers

Jim Cashman
Dick and Laverne Clark
Frank Fitchner

Ormond and Beverly Gillen
Candi Lordo
Lee Ray
Bill and Roberta Sheriff
Will Staller

What do we do with

URBAN STORMWATER?



The water that runs off of our roofs, down our gutters, through our yards, across our roads, driveways and parking lots, and into our storm drains, eventually ends

up in our streams and lakes. Water flowing over an impermeable surface, like concrete, has a higher velocity and is more likely to push along whatever it comes in contact with. All too often, the water comes in contact with pollutants.

There are several types of pollutants that you can expect to find in stormwater. Nutrients (from fertilizers, pet waste, etc.), soil, litter (from cigarette butts, fast food wrappers, etc.), and toxins (from motor oil, pesticides, etc.) can all be picked up by rain water. All of these so-called nonpoint source pollutants are normally spread out over several square miles, but during a rain storm they can be washed into a stormwater system and then into a single water body.

Stormwater runoff is a growing concern in Missouri, especially with the implementation of the EPA's "Phase II Stormwater Program". Phase I required that cities with populations larger than 100,000 obtain permits for their stormwater discharge. These permits required monitoring of stormwater discharge and that the municipalities address stormwater in the future.

Phase II imposes a similar requirement on municipalities that occur in so-called "urbanized areas". An urbanized area has a population density of greater than 1000 people per square mile, and a total population of more than 50,000 people. Urbanized areas aren't restricted to city limits

however, and an urbanized area can incorporate smaller towns and even span across counties.

The six *minimum* steps that a municipality may take involves all of the following:

1. Public outreach and education
2. Public participation/ involvement
3. Illicit discharge detection and elimination
4. Construction site runoff control
5. Post-construction runoff control
6. Pollution prevention/ good housekeeping

I won't go into these requirements specifically, but you can visit the internet links at the address listed below the article. Essentially what this all means is that the towns and cities within Missouri's urbanized areas must develop a plan to reduce pollution in their stormwater or face punitive measures from the EPA.

The things we can do at home to help reduce pollution in stormwater runoff are the same things that we do to reduce nonpoint source pollution. These things include using lawn fertilizers carefully (if at all), planting in bare soil patches to prevent erosion, picking up litter, and responsible disposal of household waste and pet waste. Anything on the surface of the land has the potential to be washed into our lakes and streams. It all flows downhill, but first it must run downhill.

Tony Thorpe

**Missouri's
Urbanized Areas:**

Columbia	Jefferson City
Joplin	Kansas City
Lee's Summit	Saint Joseph
Saint Louis	Springfield

(Source: The EPA website— <http://cfpub.epa.gov/npdes/stormwater/urbanmaps.cfm>)

For more information, please visit the website at www.lmvp.org/waterlinespring2003.htm

The Scoop on

Many volunteers seem to have concerns about bacteria in their lakes. We may not like the green water associated with algae blooms or the brown water associated with eroded soil, but it's the bacteria that most people are *really* worried about. And that's for a good reason, fecal bacteria can cause sickness.

Usually we look around the landscape for the source of the offending bacteria. Septic systems, lagoon overflows, municipal sewer systems are all subject to careful scrutiny. There is another source of fecal coliform bacteria contamination that is frequently overlooked, and that is pet waste. In fact, two studies found that 95% of the fecal coliform bacteria in *urban stormwater* was not from humans.

There is an estimated 5,000 pounds of poop generated each day from 12,000 dogs in one watershed of a Washington D.C. suburb (0.42 pounds per day). What happens to all of that stuff? If it isn't picked up it dissolves in the rain and snow eventually. But it doesn't just "go away". It runs downhill and into the nearest waterway. If you live on a lake, that's where it goes.

Yes, your sweet pooch that is all smiles and kisses at one end, is busy polluting with the other. Picking up

after our pets is the best way to prevent their waste from getting in our lakes and streams. It seems, however, that only about 40% of us do that. Women are more likely to pick up the stuff than men are, according to the Center for Watershed Protection.

It's a shame we aren't more likely to pick up after our animals. Just one day of dog doo can contain 4.4 *billion* fecal coliform bacteria. Dogs can be hosts for *Giardia* and *Salmonella*, two diseases caused by microbes that can adversely affect human health. These issues are resolved by simply picking up the poop.

After picking up our puppy's "gift" we have a few options. We can flush it down our toilet where it will be treated just like human waste, we can throw it away with our trash, or we can bury it. If you choose to bury your pet waste, be sure to put about eight inches of soil on top and don't bury it too close to the lake. Also, don't mix pet poop with your vegetable garden. It's OK to compost dog doo, but don't use the resulting mixture where children will be playing or where you will be growing food.

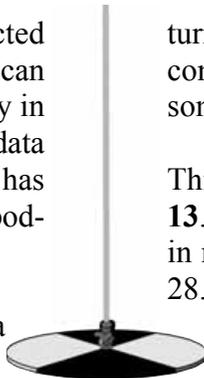
Another option I haven't covered yet is a professional service that will scoop up and dispose of your fido feces in a friendly fashion, for a fee.

Tony Thorpe

The 2003 Great North American Secchi Dip-In

By now, volunteers should have been contacted by representatives of the Great North American Secchi Dip-in. Based at Kent State University in Ohio, the Dip-in has been collecting Secchi data since 1994. The Dip-In database now has 22,000 measurements on over 5,900 water bodies.

The Dip-in is a great way to contribute to a large scale record of water quality. A large



turnout also sends a message to others that we are concerned about our water quality and are doing something about it.

This year's Secchi Dip-in is from **June 28 to July 13**. Volunteers will receive a form from the Dip-in representatives via mail sometime prior to June 28. If these dates don't coincide with your regular sampling dates, please don't hesitate to make a special trip!

SHORELINE EROSION

Is your house getting closer to the lake each year as your shoreline erodes? Several factors contribute to this type of erosion. Wave action from wind, boats and storms can destroy the shoreline. As these waves crash into the unprotected shore, shoreline sediments are washed into the lake and re-deposited elsewhere. Fluctuating lake levels are one of the most common causes of shoreline erosion. Since most of the lakes in Missouri are man made reservoirs, the vegetation growing on the lake's edge is often not suited to alternating wet/dry conditions. As the water level rises, it covers the roots of upland trees and grasses. Then the water-covered roots don't get enough oxygen. If that doesn't kill the plants, the roots are then exposed by erosion when the water recedes.

Before you begin an erosion control project...

First, step back, and determine the cause and extent of shoreline erosion at your lake. Is this due to wind action? If so, maybe only the windward side is affected, and there may not be anything you and your lake organization can do to prevent it. Is the erosion caused by boat action, construction, or ice? Perhaps no-wake zones, construction ordinances, or ice break-up would address these issues.

Next, is the problem serious enough to address? How much of the shoreline has an erosion problem? What is different in the areas that don't seem to be eroding? Are all the property owners willing and able to address this problem?

Last, what is the overall goal for the lake? Is this

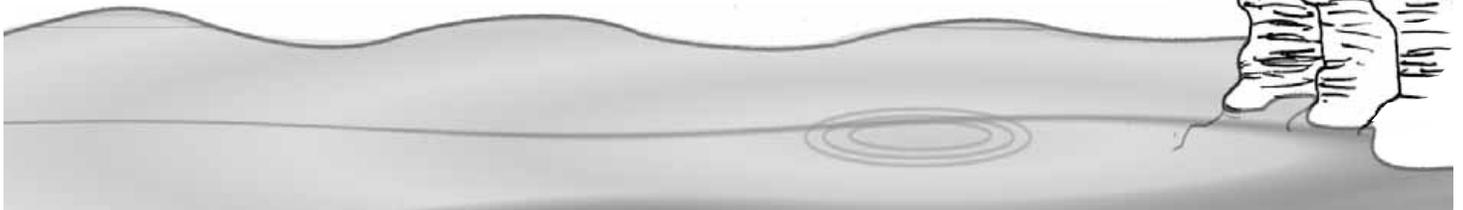
lake primarily used as a fishing, boating, swimming or drinking water lake? How do the lake owners want the lake to look; natural with a vegetated boarder, reinforced with a seawall, rock riprap, or some of each?

Methods of Erosion Control

The three types of standard erosion control are vegetative, structural, and combination. None of these methods is right for all situations. It is important to match the type of erosion, and lakeshore environment, to the control method.

Vegetative erosion control is the use of native plants and trees to stabilize the soil near the shore. Cattails and reeds can be used in the water to lessen the effects of wave action. These plants are very hardy and can withstand changes in lake water levels. On shore, landowners can use shrubs, willows, to shade the lot and reduce erosion.

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(Shoreline Erosion—Continued from page 5)

Vegetative – Advantages

- ✓ Trees shade the lake. This can lower water temperatures.
- ✓ Increased spawning ground for fish.
- ✓ Cuts down on mowing, and therefore less maintenance.
- ✓ Soil and fertilizers are filtered through buffer strip, so less ends up in the lake.
- ✓ Ducks favor this type of habitat – less food source for geese.

Vegetative – Disadvantages

- ✓ Increases chance encounter with water snakes, ticks.
- ✓ Does not provide “neat” shoreline view with park-like grass.

Structural erosion control involves building either a sea wall or the placement of rock riprap. Use of riprap is the most common type of erosion control. It involves the positioning of rock on the shoreline, often over a special filter cloth. Rock size is dependent on wave height, and bank slope. Obviously, the harder the waves are hitting the shore, the bigger the rock size required. This type of construction requires a 404 permit from the Corps of Engineers, and a 401 permit from the Department of Natural Resources.

Riprap – Advantages

- ✓ Provides some structure for smaller fish/crayfish species.
- ✓ May prevent further erosion of site, if correctly installed.
- ✓ May provide immediate erosion control – reduced wave action.

Riprap - Disadvantages

- ✓ Riprap protects only the land immediately behind the barrier, and not the adjacent areas. In fact, erosion may increase by wave reflection from the structure.
- ✓ Riprap does not reduce water temperature, or filter soil from the land above the lake.

- ✓ Riprap must be done correctly to have desired effect, the initial cost is high, and it does require maintenance as rock settle and fall into the lake.
- ✓ Riprap does not maintain natural look of the lake.
- ✓ Lakes with a riprap shore are less likely to have ducks or geese – waterfowl like to be able to walk out of water.

Combination of shoreline erosion control uses both of the previous methods. Riprap is first installed on the site, with soil added to the areas away from the water's edge. Tree plantings are then scattered within the rock riprap. Permits are required for this type of construction.

Combination - Advantages.

- ✓ Immediate erosion control, with future benefits of vegetation.

Combination - Disadvantages

- ✓ Most expensive, since you have to do both riprap and plantings. Choose plants, such as willows, that are able to withstand fluctuations in water level.
- ✓ Combination does require some maintenance to keep trees and rock in place. Usually only one tree species is planted on the site.

By stabilizing your shoreline you can prevent loss of property, and improve water clarity. The trick is knowing which method is right for your situation. For more information, check out these websites.

www.dnr.state.wi.us/org/water/fhp/waterway/eroscont.htm

www.bbmwd.org/erosion_control.htm

www.longlakellpa.org/news/newsletter0401/newsletter4.html

www.epa.state.il.us/water/conservation-2000/lake-notes/stabilization.html

Georganne Bowman

Bad Water Quality Is Money Lost



Poor water quality, specifically poor water clarity, can put a damper on your weekend. Swimming in opaque water is a little bit creepy, and green water doesn't look as nice as clear, blue water. In Missouri, the loss of water clarity is almost always due to either suspended sediment or algae.

The presence of suspended sediment or excess algae in the lake can be linked to activities in the watershed. However, finding the source isn't usually as hard as doing something about it. You have to convince folks that their actions are bad for the environment, the community, the lake.

Now there's another tool for convincing people not to pollute. Money. I'm not talking about fines, or punishment of any kind. I'm talking about lost revenue due to pollution. Research from Maine and Wisconsin indicates that the value of lakefront property can drop significantly with a decrease in water clarity. Water clarity is apparently an important factor for people buying property on lakes.

The Maine study found that a 3 foot decrease in water clarity meant a loss of 10% to 20% in the selling price of lakefront property. That equals \$594 per frontage foot in the case of the Maine study. Just as interesting is the fact that property values *increased* with improved water clarity. A 3 foot increase in water clarity sent property values up \$423 per foot of frontage.

The benefits of higher water quality aren't reserved solely for the landowners on the lakes, either. Increased property values means increased tax revenues for the communities around the lake. Depending upon the size of the town, such an increase could translate into big bucks for city services and schools.

Tony Thorpe

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Did I Miss My 2002 Data Review?

No, you weren't mistaken; this spring was different than past springs in terms of LMVP activities. Instead of numerous smaller data reviews, we conducted one larger meeting at the Lake of the Ozarks. The reason was two-fold. 1) We wanted to bring volunteers together for an event that offered a little more than the average data review, and 2) We didn't have time to do all of the individual review sessions.

You may ask 'What were you doing instead of data reviews this spring?' and the answer would be simple...training new volunteers! Historically the LMVP has tried to grow a little each season, adding anywhere from a few sites to five new lakes. But this year was different. This spring 28 new volunteers were trained to collect lake samples and water quality data. This means that the program will increase from 25 lakes in 2002 to 40 lakes in 2003.

So how will this affect future data reviews? The jury

is still out on that question. It is unlikely that the program will display similar growth in coming years. Tony Thorpe, coordinator for the LMVP, was overheard saying "Never again will I add this many lakes in one year!" This means there will be more time for data reviews in coming years, but there will also be more lakes in the program. As next spring approaches LMVP coordinators will sit down and decide how provide feedback to volunteers in an efficient and effective manner.

If you have any questions about last year's data please feel free to contact Tony and Dan. Also, if you have any ideas or suggestions about future data reviews pass them along, we are always looking for a better way to do things. Our goals are to maintain contact with the volunteers, provide feedback in a timely fashion, and continue to grow the program. With your understanding and help, we can achieve these goals.

Dan Obrecht