



THE WATER LINE

Lakes of Missouri Volunteer Program

May 1997

Volume 1

Number 1

112 Stephens Hall, University of Missouri, Columbia, MO 65211

What you hold in your hands is the first issue of The Water Line, the official newsletter of the Lakes of Missouri Volunteer Program (LMVP). We plan on sending three newsletters out each year. Hopefully the newsletter will provide you with some history of the program, keep you up to date with late breaking news concerning the program and current issues in water quality. We will also try to use this space to provide information about lake ecology.

In 1992 the Missouri Department of Natural Resources (DNR) secured a grant from the US Environmental Protection Agency to develop a citizen monitoring program for lakes. The School of Natural Resources at the University of Missouri (MU) was chosen to administer the Lakes of Missouri Volunteer Program. The ongoing goals of the program are to (1) involve citizen volunteers in the collection of water samples to monitor lake trophic state and (2) provide outreach education about lake water quality.

If you have any questions you would like to see answered in the newsletter or have anything you would like to submit please send it in. We want this newsletter to be a place where you can voice ideas, helpful hints, etc.

If there is anyone you know who is interested in water quality and would like to receive copies of the newsletter, please let us know.

WE HAVE A NEW PHONE NUMBER

The Lakes of Missouri Volunteer Program has a new phone number.

1-800-895-2260

This number will take you directly to the Lakes of Missouri Volunteer Program voice mail box. The 800 number will let you call us toll free whenever you want (weekends) and allow us to get your complete message every time you call. We will check the mail box on a regular basis so we can respond in a timely fashion.

We also are aware that there will be area code changes for some of the volunteers. **Please contact us through our voice mail box about these area code changes so we can keep our records updated.** Thank You!

PERSONNEL CHANGES

We are sorry to say goodbye to Diana Fawks of the DNR. Many of our volunteers have met Diana at data review sessions and other program functions. She has been working as our liaison between the DNR and MU. Diana has played a valuable role in the creation and success of the LMVP and we extend our thanks and appreciation. She will be relocating to the Chicago area and we wish her the best of luck!

There is also a temporary change in the MU coordination staff of the LMVP. Meg Milanick is taking a family leave of absence and Fran Pope will be filling in for her during her sabbatical. Fran has worked in the Limnology Laboratory at MU for 4 ½ years as a lab and field technician and is very excited about the opportunity to work with the program.

A Note from Meg

I will be taking a six-month leave from working with the Lakes of Missouri Volunteer Program. My leave started in April and will extend into September. I have decided to take on the role of Mom full time and so will be home with my three and a half year old son, Billy. Dan will still be working with the program, with help from other dedicated personnel in our lab. He will be arranging pickups, etc. and if you have any questions or any problems, please contact him.

I will miss working with you all. The summer won't be quite the same. But I really appreciate all the time and energy you will have put into making each season of

sampling a success. Here's to a successful 1997 season and the best summer weather Missouri has to offer!



IMPORTANT!!

Quality Assurance and Quality Control

One of the ongoing goals of the program has been to collect data that we feel is of high quality. One method of insuring that our data is reliable is through the implementation of quality assurance and quality control methods (QA/QC). In the past we have independently sampled volunteer lakes, conducted split samples and compared chlorophyll filter replication.

This summer we are going to incorporate a new QA/QC procedure known as field duplicates. Quite simply put, you will rinse and fill an extra nutrient bottle from one of your samples. We will then analyze the two bottles for nitrogen and phosphorus. Ideally, the results from both bottles will be extremely close. Variability between the duplicate bottles would suggest problems in our procedures such as poor rinsing, contamination, problems with recovery from the frozen samples, etc.

You are left to decide when to take the field duplicate. We will distribute an extra bottle when we do mid-season pickups, so everyone will have enough nutrient bottles for the whole sampling season. Please make sure you rinse both bottles as you normally would, fill out the appropriate information on the front of each bottle and make a note on your lab data sheet letting us know on which day you took your field duplicate.

Speaking of QA/QC

We are very proud to announce that we are publishing an article entitled “Evaluation of data generated from lake samples collected by volunteers” in the journal Lake and Reservoir Management. The article uses results from the Lakes of Missouri Volunteer Program and evaluates the reliability of volunteer data using three methods: 1) Comparison of volunteer and University samples from 1992-1994 in terms of trophic state assessment, 2) Uses chlorophyll filter replication as a form of quality assessment, and 3) Looks at results from split samples taken in 1995.

Results indicated that volunteer data is comparable to data generated through a research laboratory. These findings suggest that the data you are helping us collect is quite reliable.

At a recent conference in Chicago there was notable interest in the findings of this study. Other volunteer programs are looking at this work as grounds for expanding their programs (many other programs just take Secchi readings). Your hard work may play a role in making volunteer collected samples a creditable source of data concerning water quality throughout the country. GOOD WORK!

IMPORTANT TERMS TO KNOW

Limnology - the physical, chemical, biological, and meteorological study of inland waters, including lakes, ponds, reservoirs, streams, rivers, wetlands, and

estuaries.

Quality Assurance - a set of operating procedures that, if strictly followed during sample collection and analysis, will produce data of known and defensible quality.

Quality Control - laboratory methods that ensure analysis produce credible results. Analysis of field duplicates will fit into this category.

Secchi Disk - a simple yet an effective tool used to measure water clarity. The disk is eight inches in diameter with black and white quadrants. Readings are made by averaging the depth in which the disk disappears when lowered into the water and the depth that it reappears when raised in the water column.

In Missouri lakes the two most important factors influencing Secchi transparency are the amounts of inorganic suspended solids (silts and clays) and the amount of algae. These materials absorb and reflect light that enters the water thus reducing the depth at which the Secchi disk can be seen.

“All I can figure is that he must have been inspecting the water quality of our lakes when he became entangled in cement”

LAKE PROFILE - TABLE ROCK

Volunteer sampling on Table Rock Lake began in 1992 at three sites. By 1996 volunteers were collecting samples from 13 sites across the lake.

Results from 1996 indicated that water quality ranged widely on the lake depending on location. Secchi transparencies at the dam averaged 19 feet while three other sites had average readings of 3 feet. Figure 1 shows average Secchi readings for all sites on Table Rock Lake during 1996. Average chlorophyll values ranged from a minimum of 2.5 $\mu\text{g/L}$ at the dam to 45.7 $\mu\text{g/L}$ at site 13 in the James River Arm. Figure 2 shows the average chlorophyll values for all sites in 1996. The horizontal lines at 3, 7 and 40 $\mu\text{g/L}$ indicate the cut points between oligotrophic, mesotrophic, eutrophic and hypereutrophic conditions. Sites on Table Rock Lake ranged from oligotrophic to hypereutrophic based on 1996 chlorophyll values.

Figure 3 demonstrates how total phosphorus, based on LMVP data from 1996, increases exponentially as site location moves up the James River Arm from the main lake channel. Data generated through the program are being used in conjunction with data from another project. This project focuses exclusively on Table Rock Lake. This project will do more extensive sampling along the length of the James River Arm and the main channel. This project will use these and other samples (including LMVP data) to determine if water quality in the lake is changing and if so what is the possible cause of these changes.

Map of Sample Sites on Table Rock Lake.

Great American Secchi Dip-In Update

This summer, the fourth Great American Secchi Dip-In will take place. The Dip-In was conceived by Dr. Bob Carlson of Kent State. The goals of the Dip-In are to get a snapshot of water transparency throughout North America while increasing awareness of volunteer monitoring programs and water quality issues.

In 1996 there were 2,300 participants from thirty-seven states and three Canadian provinces involved in the Dip-In.

The following table comes from preliminary results and provides a quick glance at how Missouri measured-up to nearby states. We will send out the final report from 1996 when we receive it.

The 1997 version of the Dip-In will be held between June 27 and July 13. Be watching the mail for your questionnaire and information about the Dip-In. We are hoping that all of the LMVP volunteers will participate in the Dip-In. We might suggest you check out the number of volunteers that Missouri had last year compared to Kansas!!

Preliminary results from the 1996 Great American Secchi Dip-In.

State	# of participants	Average Secchi (feet)	Minimum (feet)	Maximum (feet)
Iowa	3	2.59	1.40	3.22
Illinois	70	4.26	0.88	14.00
Kansas	18	2.87	0.66	4.27
Kentucky	1	1.33	1.33	1.33
Missouri	18	5.73	1.25	15.21
Nebraska	25	2.45	0.02	10.83
Oklahoma	19	3.05	0.39	10.2

THANK YOU!!

Dear Volunteers,

We would like to say thank you to all of our valuable MVP's. This program has been very successful due to the hard work and dedication of the volunteers. With your help, we have been able to collect reliable data that will enable agencies to monitor and protect our lakes. Raising awareness and educating the public about water quality issues has been an important aspect of the program. Dan has enjoyed working with all of the volunteers and Fran is looking forward to meeting them.

Please make sure you have read the section of the newsletter about the new Quality Assurance and Quality Control procedures. We will explain these new procedures in more detail when we pick up the mid-season samples.

We are looking forward to working with all of you this summer. Please do not hesitate to call us with any questions or concerns. We need to hear from you if you have any problems. Remember, our new toll-free telephone number to our voice mail service is **1-800-895-2260**.

We are hoping to expand the program again this year and would like to have volunteers on the following lakes: Thomas Hill Reservoir, Long Branch Lake, Pinnacles Lake in Montgomery County, and Lincoln Lake in Quiver River State Park. If you know anyone who would be a good candidate for volunteering on any of these lakes, please send us their name and phone number.

Thank you again for your dedication to this project. We are looking forward to a great sampling season.

Sincerely,

Dan Obrecht
Fran Pope

LAKES OF

MISSOURI

VOLUNTEER

PROGRAM