



# WATERLINE

June 2005

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## Time to renew

WALPA members who did not attend the 2005 conference may renew their memberships today. Send dues to WALPA, P.O. Box 4245, Seattle, WA 98104.

Membership fees are:  
\$15 students, \$20 individual, \$30 professionals, \$40 organizations.

This is the last newsletter that 2004 members will receive until their 2005 dues is paid.



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Please save *Waterline* issues for future reference.



WALPA Photo Contest winner: Deer Lake, by Mike Phillips.

## Spokane Valley conference informative

By Sally Abella, WALPA President

The 2005 WALPA conference held in the Spokane Valley was attended by more than 125 concerned citizens, consultants, managers and government staffers. The theme, "Lake Stewardship in the Pacific Northwest," featured the glacial history of Eastern Washington, hydrology of the Spokane aquifer, major issues at Lake Coeur d'Alene, the roles citizens can play in governmental decisions, TMDL progress in Washington, updates on the current status of aquatic plant treatments and permit-

ting, and current conditions at Newman and Liberty Lakes, and other interesting and timely subjects.

The keynote speaker, Rene-Marc Mangin, Ph.D., director of the Eastern Regional Office of the Washington Department of Ecology, spoke on the influence that culture, behavioral norms and expectations can play in stewardship actions. He analyzed the complexities that arise when attempting to manage environmental problems and introduced the concept of *continued on page 2*

# Lake Focus on Moses Lake revisited

By Heidi Wachter

For this issue of the *Waterline* newsletter, Lake Focus will revisit Moses Lake. This lake is located in Grant County about 95 miles southwest of Spokane. *Waterline* reader and well-known limnologist, Professor Eugene Welch, Ph.D., shares additional information regarding the lake's condition and past restoration efforts. Thanks Professor Welch! We enjoy and encourage our readers to share their knowledge and ideas.

## More on Moses Lake

By Eugene Welch, Ph.D.

A review of the past water quality trends, not covered in the March article, provides an important perspective on the condition of this lake today. While the lake may still have problem years, the restoration efforts pursued by the Moses Lake Irrigation and Rehabilitation District (MLIRD) during the 1970s and 1980s turned the lake from hypereutrophic to near mesotrophy, with MLIRD receiving a NALMS best project award in 1986.

The efforts by MLIRD resulted in:

1) Regular spring-summer additions of low-nutrient Columbia River water, via US Bureau of Reclamation canals, to Parker Horn (with pumping to Pelican Horn) starting in 1977; 2) Sewage effluent diversion from Pelican Horn in 1984; and 3) Modest fertilizer reduction on some irrigated land starting in the mid-1980s. By far the principal reason for the reduction of phosphorus and improvement in water quality was the dilution water, which has been added yearly (except 1984) through at least 2001 at an average input of  $170 \times 10^6 \text{ m}^3$  representing 1.1 lake volumes. Dilution water enters via Crab Creek into Parker Horn, disperses through South Lake, part of the Main Arm and is pumped into Pelican Horn. A couple years in the 1990s had low dilution water input, but low input years have been rare.

The lake was hypereutrophic in 1969-1970 with surface mean summer total phosphorus (TP) at 154 mg/L and chlorophyll (chl) at 57 mg/L with intense and scummy cyanobacteria blooms. By 1986-1988, water quality

improved to 44 mg/L TP and 17 mg/L chl - still eutrophic - but with few such intense blooms. Sampling was infrequent and incomplete in the intervening years until Washington Department of Ecology monitored the lake in 2001, when TP and chl were 18 and 11 mg/L, respectively - a mesotrophic condition. Cyanobacteria represented < 5% of total biomass in 2001 compared to 98% in 1969-1970 and 73% in 1981-1988. An apparent elimination of net internal P loading, which averaged  $33 \pm 15\%$  during 10 years of 1977-1988 (excluding post Mount Saint Helens ash years of 1980-1981), to a negative value in 2001, as well as a high dilution water year (double the long-term average), can account for the dramatic improvement.

While the lake may still reach eutrophy with blooms during occasional low-dilution years, the fact that it is in vastly better condition since the restoration efforts is important to remember in discussions of the need for controls on inputs to protect the lake during low-dilution years.

For details see, "Lake trophic state *continued on page 3*

## Spokane conference from page 1

"wicked problems," which are not only difficult to define or encompass, but which also have no simple long-term solutions, thus making adaptive management and constant communication imperative.

At lunch on March 31, WSU Professor Emeritus Bill Funk, Ph.D., entertained the audience with his reminiscences of his years of work on lakes throughout the Pacific Northwest, including anecdotes about his many graduate students and humorous incidents during their research work.

One session highlighted current research at universities in the state, including two graduate students who received WALPA scholarships last year and returned to report on the success of their studies. Five more scholarships were given to students

this year, accompanied by an invitation to present their work at the 2006 or 2007 conference. One of the scholarships was dedicated to the memory of Nancy Weller, a Washington Department of Ecology staffer. A Weller family member attended the award ceremony, which was very much appreciated by the group.

Recognition and thanks were offered to Allen Moore, recently retired from the Washington Department of Ecology water quality unit, for his many years of service and dedication to water quality issues and concerns throughout the state.

The final session was a spirited panel discussion on toxic bluegreen blooms throughout the state. It was very well attended, with many questions coming from the audience. Similar panel discussions on various

lake topics will be planned for future conferences.

Vendors and concerned citizens' groups also played important roles at the conference. Two vendors held pre-conference seminars to acquaint people with advances in instrumentation and to troubleshoot problems. Ten vendors and groups put up displays, along with several educational posters. A social gathering on Thursday evening was centered around the exhibits and photos for the contest, giving attendees a chance to talk and make connections.

The board is discussing a possible Pacific Northwest regional conference in 2006, in Portland, Oregon. If the regional conference is planned for another year, the location for the 2006 WALPA conference will be announced in the September *Waterline*.

## Focus on Moses Lake continued from page 2

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change and constant algal composition following dilution and diversion," Ecol. Engr. 1:173-197, E.B. Welch, R.P. Barbiero, D. Bouchard and C. A. Jones, 1992.

Questions about the Moses Lake research may be sent to Gene Welch, ebwelch@u.washington.edu.

Note: WALPA makes no guarantee to the accuracy of this information.

The September Lake Focus is on Lake Tapps in Pierce County. Those of you in-the-know who have conducted research on Lake Tapps or have a historical (or future) perspective to share, please contact Heidi Wachter (heidi@taylorassoc.net) by July 15.



WALPA Photo Contest winner: Gill Man, by Laurel Shiner.

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## **Free resources**

For free printed and video resources on aquatic weed control, visit [tncweeds.ucdavis.edu/outreach.html](http://tncweeds.ucdavis.edu/outreach.html).

Share the joy of boating and fishing. National Fishing and Boating Week is June 4-12. More information available on [www.takemefishing.org](http://www.takemefishing.org).

King County Water and Land Resources Division newsletter:  
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The next deadline is Aug. 1 for the Sept. issue. Send articles to Editor Paula R. Lowe, [pmrlowe@comcast.net](mailto:pmrlowe@comcast.net).

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