Minnegram On-line

June 1996

MN Water Resources Research Grant Proposals Selected

Four Proposals Forwarded to Regional Competition

The Minnesota Water Resources Research Center's review committee selected four research proposals to compete for funding from the Northcentral Region of the national Water Resources Research Institutes program. As reported here in March, approximately $805,000 in grant funds will be distributed within the region over a 3-year period. No award will exceed $250,000.

In response to a request for proposals issued mid-March, the WRRC received 17 pre-proposals from researchers associated with colleges and universities in Minnesota. These were reviewed by a committee composed of university faculty and representatives of government agencies with interests in water, who rated pre-proposals on the basis of technical merit, relevance to state needs, fit with regional priorities, likelihood of success, and reasonableness of budget and time. The four with the highest ratings on these criteria were selected.

Profs. Susan Galatowitsch and John Tester (UMN Departments of Horticulture and Fisheries & Wildlife) proposed development of biotic indicators to assess the effects of land use on wetland quality. Interest in biotic indicator is growing as managers search for ways to protect integrated wetland functions. Although land use is understood to have important impacts on wetlands, guidelines for relating measures of watershed degradation with biological community integrity are lacking. The researchers propose to develop such guidelines using GIS to estimate land use degradation and publish results in a guidebook to be distributed statewide.

Profs. Edward Nater and David Grigal (UMN Department of Soil, Water & Climate) seek funding to continue research on transport of mercury through forested water-sheds. Knowledge about transport of mercury is needed to guide forest management practices so as to minimize mobilization and transport of mercury in streams during forest harvesting. Earlier research by Nater and Grigal indicated that mercury transport is associated strongly with the particulate portion of organic carbon flux. This result was obtained indirectly, however, and direct verification is necessary. As part of the proposed project, researchers will examine the nature of the organic particles and how their composition affects mercury concentration, what process leads to mobilization of particles, and the effect of buffer strips on transport of mercury associated with organic particulate.

Discontinuities between perception and management scales on the one hand and scales at which biophysical resources can be influenced in riverine ecosystems attracted the attention of James Perry and Luther Gerlach (UMN Departments of Forest Resources and Anthropology). Profs. Perry and Gerlach propose a parallel study of environmental risk perception of people concerned

with the management of the St. Croix National Scenic Riverway and bio-physical variables within a spatial, hierarchical classification system to be developed. Associations between perceptual variables and biophysical variables will be tested for scale dependence. The result of this research will provide information on the importance of scale discontinuities and help managers develop strategies to reconcile perceptual and biophyical demands of management.

A proposal to evaluate the effects of stream re-meandering on water quality and biotic integrity would take advantage of a Department of Transportation project to re-meander a ditched portion of the Wild Rice River in northwestern Minnesota. Asst. Prof. Dann Siems (Bemidji State U, Aquatic Biology Program) proposes to document changes in nutrient uptake and fish community response to stream re-meandering by collecting and analyzing data on water quality and biotic integrity before and after the re-meandering. Siems will collaborate with David Biesboer (UMN Department of Plant Biology) and students from the Lake Itasca Forestry and Biological Station to document longer-term changes in the plant community.

Results of the regional competition will be announced mid-July.

Water Management Meets New Challenges

Minnesota Water 96' Conference Speakers Address Changes

Plenary speakers at MINNESOTA WATER '96, addressing the conference theme from their various perspectives, agreed that changes in the distribution of power and responsibility for water management present new challenges and opportunities for managers at all levels. Federal, state and local government agencies and non-government organizations were represented by speakers during the 2-day meeting. The concept of "devolution" was defined with both positive and negative aspects, but conferees focused on the positive opportunities for improving the water management process.

The first speaker of the keynote session, David Moreau, Professor of City and Regional Planning at the University of North Carolina, laid out the historical context for the changes being felt by water managers today. He described the rise and decline of the federal role in water resources from its inception at the very beginning of the Republic. States and localities were the first to demonstrate an interest in increasing water supplies and improving water quality.

They maintained a dominant position in water management until the 20th century, when through lack of financial capacity or lack of will, they ceded major responsibilities to the federal government. By tracing federal expenditures for water development and for waste water treatment infrastructure, Moreau showed that the federal government's investments in water management peaked between 1966 and 1977, and have been declining in real terms since then. Now, responsibilities and authority are shifting back to the states and local governments.

This shift is occurring simultaneously with the realization that as some problems are solved, new ones take their place and new strategies will be required to solve them. Nonpoint sources of

pollution have replaced major municipal and industrial point sources as the largest contributors to nutrient, sediment, and associated contaminant loading of surface waters and ground water degrada-tion. Managers are coming to understand that dealing with these new problems demands strategies that are comprehensive, collaborative, and flexible. Comprehensive strategies take into account the linkages of water supply and water quality with land use, air quality, ecological communities, and people. Collaborative strategies build partnerships among agencies, organizations, and individuals, exploiting the advantages provided at each level from federal to local. Flexible strategies allow local entities to meet overall water management goals in ways that make sense for local conditions.

Plenary speakers at the conference were unanimous in support of such an approach. Many described on-going efforts within their agencies or organizations to realize these goals.

With respect to the EPA, conference speakers seemed to be in perfect agreement about its future role. Keynote speaker Valdus Adamkus, Regional Administrator of Region V since 1981, described the EPA's role as a partner to state and local decision makers. According to Adamkus, the agency will streamline processes, reducing red tape, cutting costs, and increasing flexibility, without sacrificing protection. It will do this by supporting the capacity of state and local entities to take responsibility for environmental stewardship in their own areas.

Several speakers, including Adamkus, intimated that this vision for the EPA was threatened by initiatives currently favored in the House of Representatives, which would step back from the progress made on the environment. Rep. Bruce Vento (DFL, 4th District) enumerated some of the assaults on the federal legislative framework for environmental protection. These include attempts to repeal liability provisions of the Superfund statute, relax enforcement of combined sewer outflow regulations, redefine wetlands, and require cost-benefit and risk assessment and permit judicial challenges of these assessments. In Vento's words, these initiatives look more like "disassembly" than "devolution."

Vento presented perhaps the most positive view of the federal presence in water management, but others also emphasized the importance of a continuing federal role. Chuck Williams, Commissioner of the MN Pollution Control Agency and Chair of the Environmental Quality Board, stated plainly, "People who think we can operate without a federal EPA, don't understand [how environmental protection is achieved] or understand too well. A single state can only do so much." According to Williams, the EPA is needed to set minimum national standards, rigorously enforced, and to act as a repository for science. Enforcement of minimum national standards provides a level playing field for the states. As an example, Williams cited federal requirements that cities separate waste water and storm water sewers. In response to this mandate, Minnesota and the Twin Cities' spent approximately a quarter of a billion dollars to separate the sewers in Minneapolis, St. Paul, and South St. Paul. Relaxing enforcement now would put Minnesota at a disadvantage with states that were slower to respond. In addition, Williams believes states do not have the resources to meet the growing needs for data collection, analysis, and research.

Commissioner Williams welcomed the shifts in power and responsibility with respect to both the reduced federal role and increased local role in decision making. Like the EPA, the MPCA is developing a new way of doing business. The MPCA wants to focus more on local control and

local delivery of services. Williams described the goal as "a risk-based, customer-focused environmental protection agency." He seconded Bruce Vento's scepticism about cost-benefit and risk analysis, however, and distinguished Minnesota's approach to comparative risk as consensus-based, an approach by which "we can decide together where to focus our resources."

Sen. Steve Morse (DFL, District 32) provided a legislative perspective on the movement of management decisions toward the local level. In the legislature, factors that are driving the movement toward local policy implementation are the emergence of diffuse and complex problems, such as NPS pollution control, whose solutions require people to change their behavior, coupled with the fact that public dollars are becoming scarce. In this context, the state must provide the Devolution (from page 3) framework of regulations and incentives for local implementation. Morse's list of successful state-local partnership includes local water plans that have focused attention on water issues at the local level and boosted local planning and water management capabilities. He also noted the consensus on wetlands protection, the Clean Water Partnership program, river-basin organizations such as the Minnesota River Joint Powers Board, and the RIM (Reinvest in Minnesota) Conservation Reserve Program.

Two speakers, representing regional organizations, echoed support for local place-based water management from the other side of the state-local collaboration. Helen Boyer, Metro-politan Council Environmental Services Director, defined the term "devolution" as placing decision-making authority where challenges and concerns of any local community or state are decided by those whose lives are most affected. She remarked that top-down command and control strategies used in the past were effective for their times, but they are inappropriate for the challenges of NPS pollution. Boyer also emphasized a second conference theme, the need for comprehensive, or as she described it, "holistic" management for a system in which "everything is related to everything else." She characterized the Metropolitan Council's new approach to metro-region problems as employing this approach and collaborating with units of local government, non-governmental organizations, and individuals. Using phosphorus control as an example of how Council is approaching things differently, Boyer stated that they are increasing public education, monitoring, and support of local organizations. Steve Hansen, Executive Director of the Minnesota River Basin Joint Powers Board, characterized the new model for water management as a "locally-driven value-added" approach. According to Hansen, the key to this approach is trust. Past practices have not engendered trust of agencies and information providers, at least in the Minnesota River basin. Trust is built by working with people and making information more available, accessible, and relevant to them. This means listening to people's stories and using story-telling to convey information in a way that enables people to internalize the information they are getting.

At the Tuesday luncheon, Ron Severs= slides and commentary on his solo kayak trip down the Mississippi River brought the message of comprehensive, multi-tiered, collaborative management home to the audience on a personal level. If conference speakers sometimes seemed to be repeating each other, their message of faith in place-based decision-making and implementation within regional, state, and federal policy frameworks, supported by accessible scientific data, analysis, and evaluation came through loud and clear.

More than 260 people attended the two-day conference, held at the Minneapolis Convention Center, May 20-21, 1996. Speakers at the simultaneous break-out sessions shared their experience and research with the diverse audience. Conference participants particularly commended the variety of perspectives and subject matter, that included economic, social, and policy topics, descriptions of water-related programs and activities, and developments in education, as well as results of research and case studies in the physical and biological sciences.

WRRI Program Reauthorized

Congress passed and the President signed the bill that included reauthorization of the state Water Resources Research Institutes program for the next five years. It is too early to tell what, or even if, funds will be appropriated for next fiscal year, but reauthorization is a significant positive milestone for the beleaguered program.

UMD Team Wins $3,000

A student team from the Chemical Engineering Department at the University of Minnesota Duluth took second place honors in an environ-mental cleanup task at the 6th annual Environmental Design Contest sponsored by the Waste-manage-ment Education & Research Consortium. The contest is the only one of its kind in the world, where university students solve an environmental challenge in a competitive format. This year the contest was held April 21-25, at New Mexico State University.

Twenty-nine teams from 21 universities around the nation competed this year. More than $60,000 in prize money, donated by industry sponsors, was presented at an awards banquet April 25. The UM-D student team won $3,000. This was their first year competing.

Of the three tasks WERC presented, the team tackled Task III -- cleanup of waste ponds and vegetation contaminated with radionuclides and hazardous chemicals. The students presented a paper and demonstrated a working bench-scale model for each task. They made an oral and a poster presentation to a panel of judges from industry, academia and government. Student team members are Connie Desautelle, Paul Johnson, Jennifer Marinoff, Brad Muetzel, Brian Pogainis, Rebecca Rishavy, Bryan Schuler, and Jon Shamla. Dianne Dorland, professor of chemical engineering at the UM-D, was team adviser.

Other participating schools were Cal State Fullerton, Clarkson U, Cleveland State U, Mesa State College, Michigan State U, Montana Tech, Navajo Community College, New Mexico Tech, New Mexico State U, Oregon State U, Texas A & M, Tufts U, U of Akron, U of Alabama, U of Arkansas, U of Idaho, U of Illinois-Chicago, U of New Mexico, U of Oklahoma and West Virginia U.

Lamprey: Exotic Pest Or Delicacy

Those of our readers with a taste for the exotic may want to look into the May issue of Seiche, Minnesota Sea Grant's newsletter. The cover article concerns a 2-year study, funded by the Great Lakes Protection Fund, to test overseas market potential for Great Lakes sea lamprey.

According to that article, lamprey is a culinary delicacy in parts of Europe, especially Portugal and Spain, where the price of live lamprey can be more $25 per pound. (An accompanying article contains traditional recipes for preparing sea lamprey.) Demand far exceeds supply, and populations of sea lamprey have declined significantly because of human disturbances of habitat and traditional fishing.

Market potential looks promising. The Great Lakes lamprey is a smaller version of the same species as the European sea lamprey. Judging from preliminary tests for a variety of contaminants, Great Lakes lamprey appear to meet European Union standards. Initial consumer acceptance results are expected by summer, 1996. If market tests are successful, commercial exploitation of lamprey may supplement Great Lakes population control efforts currently in place.

The project involves participants from Escola Superior de Biotecnologia in Porto, Portugal, the University of Minnesota, Minnesota Sea Grant, NOAA's National Marine Fisheries Service, and the National Biological Service.

For more information about this project, contact Jeff Gunderson, (218) 726-8715. MN Sea Grant, University of MN - Duluth

WRS Field Camp to be Held Summer Quarter

A field course intended for new graduate students in Water Resources Science and related programs will be offered for the first time this year. WRS 5010, Introduction to Field Research in Water Resources, is a 3-credit course offering an intensive 13-day field experience at regional facilities for aquatic research. August 19-31, 1996, students will receive instruction and hands-on experience with sampling and data-acquisition on major types of water resources, including large and small lakes, streams, wetlands, and groundwater.

The course will be taught by WRS faculty experts on the hydrology, physics, chemistry, and biology of aquatic systems, led by Robert Megard, Prof. of Ecology, who also serves as course coordinator. Course field sites include Lake Itasca Forestry and Biological Station, Cloquet Forestry Center, Williams Lake Research Site, and the Marcell Experimental Forest.

Resident tuition for graduate students is $609. In addition, a course fee of $340 will be used to cover all costs for transportation, lodging, and meals. Some financial assistance is available for WRS students.

For registration information, contact Maria Juergens at the WRRC (juerg001@maroon.tc.umn.edu). For course content information, contact Bob Megard, Ecology, Evol-ution & Behavior, (612) 625-5707 (megar001@maroon.tc.umn.edu) or Pat Brezonik, MN-TC DGS, WRS Program, (612) 624-9282 (brezo001@maroon.tc.umn.edu) or Anne Hershey, UMD DGS, WRS Program, (218) 726-8200 (ahershey@d.umn.edu).

Co-location of Water Centers Approved

The Center for Agricultural Impacts on Water Quality and the Water Quality Programs of the Minnesota Extension Service will be moving to Water Resources Research Center's location at 1518 Cleveland Ave., on the St. Paul campus. Deans of the Colleges of Natural Resources and Agriculture, Food, and Environ-mental Sciences agreed in May to a plan for sharing office space and personnel resources. This puts the three centers, the Twin Cities operations of the Minnesota Sea Grant Program, and the interdepartmental graduate program in Water Resources Science under one roof. The new administrative umbrella will be the University of Minnesota Water Center (UMWC).

More details on the new arrange-ments and their implications for improved delivery of information and service will be provided in a feature article in the next issue of Minnegram.

More Web Resources

We receive announcements of new WWW sources of information and connections to others with similar interests every week. Here are some recent examples:

Partnership Handbook: a resource and guidebook for local natural resource and environment groups. It provides guidance to people interest-ed in starting a partnership group, an annotated list of information sources, and links to related sites. **http://ag.arizona.edu/partners/.**

SEEK: Minnesota's Interactive Directory of Environmental Education Resources is accessible at **http://www.seek.state.mn.us.** The directory contains abstracts of curriculum materials, videos, printed materials, and software, as well as links to resource people, speakers, classes, and exhibits. It also lists upcoming events.

Minnesota River Basin Agricultural Resources and Research, UMN Dept. of Soil, Water & Climate, is a source of information relating to water quality. It also provides a list of watershed organizations and projects in the basin, as well as notices of new developments and upcoming events. **http://www.soils. agri.umn.edu/research/mn-river/.**

Minnesota Water Community News

Fisheries and Wildlife

Ira Adelman served as an external panelist on a program review team for the University of Washington School of Fisheries, Apr. 28-30, 1996.

Forest Resources

Mel Baughman and **Charlie Blinn** received promotions to professor at the May meeting of the UM Board of Regents.

Limnology Research Center

LRC received a new NSF-ESH (Earth System History) grant for collaborative study with USGS Global Change, Denver, on paleoclimate history from Great Salt Lake, Utah.

ARI awarded a grant to **Emi Ito** (with **L. Edwards**) for new stable isotope mass spectrometer and Kiel device for automation of very small samples

Fall Quarter '96 LRC Seymour Evening Seminar Series will be aimed at an overview of Neolimnology at UMN.

A special 3-day RTG workshop on time-series analyses is planned for Sept.'96 with **Dr. N. Pisias**, Oregon State University.

Antje Schwalb left for a position at U.G`ttingen. Guest scholars for the coming year are **Prof. Pan Mao**, Beijing Univ. vice dir. Geology and **Dr. Essaid Zeroual**, Post doc Fellow of the Swiss Nat.Fond.

K. Beuning, **D. Verschuren**, **G. N'Gobi** and a team from LLO led by **Tom Johnson** are studying the Lakes Victoria and Edward, East Africa during a limno-geological expedition April-May, 1996.

The 1995 LLO-LRC expedition discovered that Lake Victoria was completely dry during the last glacial maximum to 12,700 years ago. These first research findings have important implications for the speciation of the endemic ciclid fish

K. Kelts is co-founder and secretary/ treasurer of a new International Association of Limnogeology

H.E. Wright Jr. was doubly honored in Spring Quarter; first with an honorary doctorate from the College of Biological Sciences, UMN, for their 30th anniversary celebration. Second, **Wright** received the American Quaternary Associations hightest award for Career Achievement at their biennial meeting in Flagstaff. **Wright** continues an active travel program including conferences and meetings in Switzerland, Finland, and Chile.

Joe Shapiro, retired 1996, will be honored in June with a 1-1/2 day symposium at the annual meeting of the American Society of Limnology and Oceanography, Milwaukee,Wisc. Several UMN faculty members, **Bob Sterner** (EEB), **Wright** (Geol., emeritus), and **Patrick Brezonik** (CE), will be giving presentations at the symposium in honor of Prof. Shapiro.

The LRC maintains a www Home Page at http://www.geo.umn.edu /orgs/lrc/lrc.html. Check this site for a complete listing of recent publications

Minnesota Sea Grant

The Great Lakes Protection Fund awarded Minnesota Sea Grant $94,500 for a two-year study of overseas market potential for Great Lakes sea lamprey (see related story p.4).

Natural Resources Research Institute

Center for Water and the Environment

Five staff gave presentations at the 1996 Annual Minnesota Lakes Conference, "Shining Shores: From Lake Superior to Big Stone Lake," held in Duluth May 2-4, 1996. **Richard Axler** presented AAlternative individual sewage treatment sytems: Develop-ment and demonstration,@ co-authored by **Barbara McCarthy** (NRRI-CARTD), **Jeff Crosby** (St. Louis County), and **Peter Weidman** (Western Lake Superior Sanitary District). Other presentations were **Gerald Niemi**, "Forest harvesting practices in riparian zones@; **Carl Richards**, "Influences of land use change on water quality"; **Carol Johnston**, "Development of state wetland law C Recent data impacting land use planning"; and **George Host**, "Ecology & management of northern Minnesota forests: Perspec-tives from the past and the future."

Soil, Water, & Climate

In the previous listing of awards presented at the annual meeting of the Soil Science Society of America in St. Louis,we neglected to note that graduate **Eldor Paul** received the Soil Science Research Award.

Terry Cooper, has recently been named recipient of two prestigious teaching awards at the University of Minnesota: the Horace T. Morse - University of Minnesota Alumni Association Award for Outstanding Contributions to Undergraduate Education and the National Association of Colleges and Teachers of Agriculture Teaching Award of Merit for the 1995-96 academic year.

Calendar

Meetings

June 10-12, 1997. **International Symposium on Physics, Chemistry, and Ecology of Seasonally Frozen Soils.** Fairbanks, AK. Papers presented relating to the occurrence, measurement, and prediction of physical and biological processes in frozen soils. Contact: Dr. Pieter Groenevelt, Prog. Chair, Dept. of Land Resource Science, Univ. of Guelph, Guelph, Ontario N1G 2W1, Canada.

June 16-19, 1996. **Urban Wet Weather Pollution from the Stream=s Perspective**. Quebec City. Sponsored by the Water Environment Federation. Contact WEF, 601 Wythe St, Alexandria, VA 22314-1994. Phone (703)684-2400 or (800)666-0206.

June 20-24, 1996. **American River Management Society (ARMS) 3rd Biennial Symposium on River Management and Planning: Beyond the Banks**. Columbus, OH. Will explore a holistic approach to ecosystem river basin management. Contact: Caroline Tan, ARMS Program Dir, 316 Daly Ave, Missoula, MT 59801-4338. Phone (406)549-0514; e-mail arms@igc.apc.org.

June 22-28 1996. **North American Water and Environment Congress =96**, American Society of Civil Engineers (ASCE) and International Association of Hydro-logical Sciences (IAHS). A forum for discussion and exchange on a broad spectrum of topics including water engineering, quality, resour-ces, planning, and management. Special emphasis on international issues associated with the North American Free Trade Agreement (NAFTA), Canada, and Mexico. Co-sponsored with National Water Research Institute. Contact: ASCE Headquarters, Attn: Ms. Andrea Simon, Conf. and Conven. Dept, 345 E. 47th St, New York, NY 10017.

July 7-10, 1996. **51st Annual Conference of the Soil and Water Society, ARocky Mountain Rendezvous: Renew Yourself in the High Country.@** Keystone Resort, CO. Conferences themes are conservation and ecosystem science, ecological decision-making and management, the spirit of conserva-tion and sustaining ecosystems, and human dimensions. Contact: Jim Caplan, Chair, Prog. Com, SWCS, 7515 NE Ankeny Rd, Ankeny, IA 50021-9784. Fax (615)289-1227.

July 9-12, 1996. **Wetlands '96: Forming Fair and Effective Partnerships** . Washington, D.C. Symposium on wetland science, applications, and public policy, will explore government-organization- individual partnerships to improve wetland regulation and protection. Contact: Association of State Wetland Managers, P.O. Box 269, Berne, NY 12023-9745. Phone (518)872-1804; fax (518)872-2171.

July 14-17, 1996. **AWRA Annual Summer Symposium AWatershed Restoration Management: Physical, Chemical & Biological Considerations**.@ Syracuse, NY. Focused on restoration and mainte-nance of natural and disturbed hydrologic and/or water resource quality functions of watersheds, streams, and wetlands to meet a regulatory, legal, or aesthetic standard. Technical tours related to presented papers and hydrology short course will be held in Syracuse the week prior to the conference. Contact: Dr. Peter E. Black, General Chairperson, SUNY College of Environmental Science & Forestry, 1 Forestry Dr, Syracuse, NY 13210. Phone

(315)470-6671 -or- AWRA, 950 Herndon Pkwy, Ste. 300, Herndon, VA 22070-5528. Phone (703)904-1225; fax (703)904-1228.

July 30-August 2, 1996. **Universities Council on Water Resources Annual Meeting. UCOWR '96: Integrated Management of Surface and Ground Water**. San Antonio, TX. Papers will address legal and institu-tional impediments to integrated management, incorporating ground-water into watershed management, risk assessment, water marketing, preservation of biological diversity, artificial recharge, water quality impacts, and conflict resolution. Focus the roles of universities and their faculties in these issues. Contact: Lloyd Urban, Tech. Prog. Chair, Water Resources Ctr, Texas Tech Univ, Box 41022, Lubbock TX 79409-1022. Phone (806)742-3597; fax (806)742-3449; e-mail: lurban@coe2.coe.ttu.edu.

August 4-8, 1996. **5th National Volunteer Monitoring Con-ference: Promoting Watershed Stewardship**. Madison, WI. A gathering of citizens, government officials, non-profit groups and others involved in volunteer monitoring. Contact: Alice Mayio, US EPA. Phone (202)260-7018 -or- Celeste Moen, Wisconsin DNR. E-mail moenc@dnr.state.wi.us.

August 11-13, 1996, **Seventh National Conference on Drinking Water: Balancing Risks and Reason.** Prince Edward Hotel, Charlottetown, Prince Edward Island, Canada. Program topics include agricultural impacts and source protection, innovative treatment for municipal and private water supplies, monitoring and compliance. Contact: T. Duncan Ellison. Phone (613) 241-5692; fax (613)241-5193.

September 1-6, 1997. **The IX World Water Congress of the IWRA, AWater Resources Outlook for the 21st Century: Conflicts and Opportunities.@** Montreal Convention Centre, Montreal, Quebec, Canada. A triennial event for the exchange of information and to raise awarness of major water issues. Contact: Aly M. Shady, Organizing Committee Chair, Canadian International Development Agency, 200 Promenade du Portage, Hull, Quebec, Canada K1A 0G4. Phone (819)994-4098; fax (819) 983-3348; e-mail: aly_shady@ ACDI-CIDI.GC.CA.

Sept. 8-11. **Dam Safety '96, Association of State Dam Safety Officials 1996 Annual Conference**. Seattle Westin Hotel, Seattle. Focus on dam safety issues including: effects of recent disasters on dam safety, what=s new in dam safety programs, and case studies of dam rehabilitation. Contact ASDSO, 450 Old Vine, 2nd Fl, Lexington, KY 40507; phone (606)257-5146.

September 22-25, 1996. **Rivertech '96: 1st International Conference on New/Emerging Concepts for Rivers**. Chicago, IL. Celebrating the 25th anniversary of the International Water Resources Association (IWRA). Will bring together a broad range of professional disciplines to focus on emerging technical and ecological concepts in river management, river ecology and water quality, river hydrology, and river hydraulics. Contact: IWRA, U. of Illinois, 1101 W. Peabody Dr., Urbana, IL 61801-4273. Fax (217) 333-9561; e-mail: nbarrett@uluc.edu.

September 22-26, 1996. **AWRA's 32nd Annual Conference & Symposium "GIS and Water Resources."** Bonaventure Resort & Spa, Ft. Lauderdale, FL. Conference and Symposium will be held concurrently. Conference will focus on multidisciplinary research and technology transfer

solutions to diverse water resource challenges. Symposium will continue profes-sional exchanges on GIS technology, organization, application, and research. Contact: AWRA, 950 Herndon Pkwy, Ste. 300, Herndon, VA 22070-5528. Phone (703)904-1225; fax (703)904-1228; e-mail: awrahq@aol.com.

September 22-27, 1996. **Third USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology**. Tashkent Engineer-ing Institute of Irrigation and Mechanization of Agriculture, Tashkent, Uzbekistan. Discussions of scientific progress on water resource management and tech-nology, protection of water resources in various environmental settings, and evaluation of environmental impacts of management options. Special emphasis on arid zones. Field trips and cultural programs in Tashkent, Bukhara, and Samarkand. Choice of 3 tours available that include round trip air travel from New York and in-country costs. Contact: American Institute of Hydrology, 2499 Rice St, Ste. 135, St. Paul, MN 55113-3724. Phone (612)484-8169; fax (612)484-8357; e-mail: AIHydro@aol.com.

September 22-28, 1996. INTECOL's **5th International Wetlands Conference.** Perth, Western Australia. A large conference with broad themes: Physical, chemical and biological processes in wetlands; wetland modelling; applied research, technology and management; and policy and planning for wetland management. Contact: Lloyd Townley, CSIRO Div. of Water Resources, Private Bag, PO Wembley WA 6014, Australia. Phone (+61) 9 387 0329; fax (+61) 9 387 8211; e-mail: lloyd@per.dwr.csiro.au; web http://www.dwr.csiro.au/

October 5-9, 1996. **WEFTEC '96, The Water Environment Federation=s 69th Annual Conference and Exposition**. Dallas. Contact: Water Environment Federation, attn: Conference Program, 601 Wythe St, Alexandria, VA 22314-1994. Phone (800)666-0206.

October 29-31, 1996. **Water Resources & Environmental Research: Towards the 21st Century**. Kyoto, Japan. Contact: Prof. Shuici Ikebuchi, WRRC, Disaster Prevention Research Institute, Kyoto Univ. Gokasho, Uji, Kyoto 611, Japan.

November 3-6, 1996. **International Conference on Evapotranspira-tion and Irrigation Scheduling and the Irrigation Association Exposition**. San Antonio, TX. Focus on new and developing technology, applications, and future needs. Contact: Judy Brown, American Society of Agricultural Engineers. Phone (616)428-6323; fax (616)429-3852; e-mail: brown@asae.org.

November 12, 1996. **29th Annual Water Resources Conference sponsored by the Minnesota Section, ASCE and Univ. of Minnesota**. Univ. of Minnesota, St. Paul Campus. Conference will present a variety of topics including bioengineering, hydraulic structures, wetland restoration, creation, and enhancement. Contact: Bev Ringsak, Prof. Devel. and Conf. Serv's, 206 Nolte Ctr, Univ. Minnesota, 315 Pillsbury Dr. SE, Minneapolis, MN 55455. Phone (612)625-6689; fax (612)626-1632.

November 13-16. 1996. **NALMS 16th Annual International Symposium: People, Lakes and Land; Puzzling Relationships**. Radisson South Hotel, Minneapolis. Symposium will address relation-ships in lake and watershed management including lake-watershed relationships, regional and national lake and landscape patterns, and relationships among people involved in

lake manage-ment. Contact: Steven Heiskary, Water Quality Div, MPCA, Attn: NALMS Conference, 520 Lafayette Rd, St. Paul, MN 55155-4194. Fax: (612)297-8683; e-mail steven.heiskary@pca.state.mn.us.

November 17-22, 1996. **Interna-tional Symposium on Hydrology in the Humid Tropic Environ-ment**. Wyndham Kingston Hotel, Kingston, Jamaica. Subjects within the special focus on hydrology in the humid tropics are expected to include island hydrology, environ-mental impact in karstic terrain, waste disposal and hydrologic problems, hydrologic data analysis, handling, and processing (including GIS, remote sensing, and remote data transmission), hydrologic modeling, mineral processing and hydrologic/ environmental impacts, urban drain-age, salt water encroachment, and hydrogeological hazards. Contact: Secretariat, Humid Tropics Environment '96, A. Ivan Johnson, 7474 Upham Ct, Arvada, CO 80003.

Calls for Papers

41st Annual Midwest Groundwater Conference. September 29 - October 1, 1996. Marriot's Griffin Gate Resort, Lexington, KY. Abstracts are requested for oral and poster presentations on all aspects of groundwater restoration, planning, management, monitoring, modeling, and research, including hydrogeology, geochemistry, legal and policy issues, and wetlands. **Abstracts due July 1, 1996**. Contact: Jim Dinger, Kentucky Geological Survey, U. of Kentucky, Lexington, KY 40506-0107. Phone (606)257-5500; fax (606)257-1147; e-mail (for questions only) dinger@kgs.mm.uky.edu.

19th Midwest Environmental Chemistry Workshop. October 12-13, 1996. Purdue University, West Lafayette, IN. Both oral and poster presentations are invited. Students are encouraged to participate. **Abstracts due August 26, 1996**. Contact: Nona Schaler, Div. Of Conferences, Purdue U., 1586 Stewart Ctr., West Lafayette, IN 47907-1586. Phone (317)494-2756 or 1-800-359-2968; e-mail njschaler@cea.purdue.edu.

Publications

Three recent publication of the U.S. Geological Survey are available from USGS-WRD, 2280 Woodale Dr, Mounds View, MN 55112. Phone (612)783-3100.

Contaminants in the Mississippi River, 1987-92. U.S. Geol. Surv. Circ. 1133. Robert H. Meade, Ed. 140 pp. A collection of articles that present the results of sample collection and chemical analyses of 10-15 sites along the Mississippi River. The river below St. Louis was sampled during 1987-92 and the river between St. Louis and Minneapolis was sampled in 1991-92. Authors describe the river and its chemical character and provide a detailed account of how samples were collected. Individual articles deal with heavy metals, nutrients, pesticides, PCBs and other synthetic organic contaminants. Analyses focus separately on water quality, sediments and fish, and contaminants from municipal and industrial sources. A final chapter examines potential harm from chlorinating Mississippi River water for drinking. An attractive, glossy publication with many informative and colorful illustrations.

Laboratory and Quality Assurance Protocols for the Analysis of Herbicides in Ground Water from the Management Systems Evaluation Area, Princeton, Minnesota. U.S. Geol. Surv. Water-Resources Invest. Rpt. 95-4178. Steven J. Larson, Paul D. Capel, and Anthony G. VanderLoop. 18 pp. Reports the procedures used for the analysis of herbicides in ground-water samples from the Princeton MSEA site from time of receipt to reporting of herbicide concentrations. Analytical techniques used are gas chromatography with mass-selective detection. Quality assurace procedures also are reported.

Relation of Land Use to Nitrate in the Surficial Aquifer along the Straight River, North-central Minnesota, 1992-93. J.F. Ruhl. U.S. Geol. Surv. A single-page information sheet providing general information about nitrates in ground water with specific application to the Straight River study area.

Advances in Modeling the Management of Stormwater Impacts. Computational Hydraulics International (CHI). William James, Ed. Papers selected from presentations made at the International Stormwater Conference held annually in Toronto, Ont. Accompanied by a computer disk with an extensive database of authors, titles, and reference information on more than 1500 conference papers. Hardcover only. Available for $50 ($60 CDN) plus shipping and handling from CHI, 36 Stuart St., Guelph, Ont, N1E 4S5. Phone (519)767-0197; fax (519)767-2770.

Water 2010: Four Scenarios for 21st Century Water Systems. Rocky Mountain Institute. Describes and illustrates scenario-building as a water system planning tool. Four scenarios are developed to reveal the factors that will shape the future of municipal water services. Copies are available for $9.00 plus $2.50 shipping and handling from Rocky Mountain Institute, 1739 Snowmass Creek Rd., Snomass, CO 81654-9199. Phone (970)927-3851; fax (970)927-4178; e-mail <orders@rmi.org>.

Lakeside Minnesota. Minnesota Lakes Assn. A new magazine devoted to protection and preservation of lakes and rivers. Plans include articles on lake conservation and nature and lifestyle features. First issue should appear May/June 1996; subsequent issues will appear 10 times per year. Subscriptions are available at $15/year from the MLA. Phone (800) 515-LAKE; e-mail: prolake@uslink.net.