6-1993

Water Current, Volume 25, No. 1, June 1993

Water Current

University of Nebraska Water Center/Environmental Programs

Vol. 25 No. 1
June 1993

Inside

Calendar of water-related events — Page 4

UNL students issue verdict on international dam controversy — Page 5

Researchers, agents tour soil and water sites at UNL, Lincoln area — Page 6

More accurate fertilizer recommendation goal of pilot study —Page 7

"Flat Water: A History of Nebraska and Its Water" available — Page 8

22-year-old tradition

Water resources tour set to see state's sites in July

by Bettina Heinz Hurst

LINCOLN — Now in its 22nd year, the annual Nebraska Water Resources and Irrigation Tour continues its mission of providing an educational opportunity to those interested in water issues.

Groundwater recharge projects, irrigated farms and wildlife sites are only part of the agenda of this year's tour, which will take place July 21-23.

The tour will feature numerous sites related to water resources in central and south-central Nebraska. The Nebraska Water Conference Council, the Institute of Agricultural and Natural Resources and the Water Center/Environmental Programs at the University of Nebraska-Lincoln sponsor the event.

In recent years, between 80 and 90 individuals have participated in the tour. Participants come from a variety of backgrounds, brought together by a shared interest in water issues.

"It's an opportunity to view some water projects and irrigation districts that otherwise people might not have an opportunity to see and learn about first-hand," said Les Sheffield, coordinator of outreach programs, Water Center/Environmental Programs.

Mixed Backgrounds

State and federal agencies send representatives, as do irrigation districts, natural resources districts and farm organizations. Individual irrigation farmers, representatives of environmental and farm organizations as well as members of the public curious to learn more about water management also take part.

"Equally as important as the tour stops is the opportunity to visit with each other on the tour, to meet people from different backgrounds," Sheffield said.

"Equally as important as the tour stops is the opportunity to visit with each other on the tour."

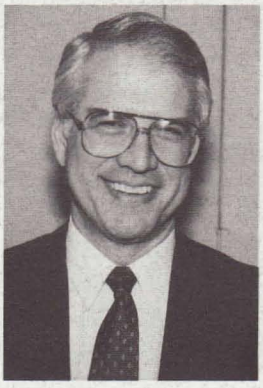
— Les Sheffield, tour director

The main points of interest featured this year are groundwater recharge projects in York and Hall counties, the Farwell and Twin Loups irrigation districts, including Davis Creek Dam and Calamus Dam and Reservoir, and the Calamus State Fish Hatchery.

Participants will have an opportunity to see the Platte River Whooping Crane Trust's Wild Rose Ranch, the Central Public Power & Irrigation District facilities, several irrigated farms and feedlots, and the NU West Central Research and Extension Center at North Platte. A buffalo stew feed will be offered

See Tour, Page 3.

From the Director



Bob G. Volk

Award of two national grants reflects high level of activity

First I wish to welcome Bettina Heinz Hurst as our new communications specialist. This issue of Water Current with its new look is one of Bettina's first activities since coming to us from Red Cloud, Neb., June 1. We look forward to her activities, and I welcome you to call or stop in and get acquainted.

I have more good news for Nebraska and recognition of our high level of activity in the water sciences area. In its annual grants competition, the Cooperative State Research Service of the U.S. Department of Agriculture awarded two new water quality grants to faculty: *Sprinkler Irrigation as a Remedial Technique for Volatile Organic Carbon Contaminated Groundwater* with Roy Spalding, Dennis Alexander, Derrel Martin and Mary Exner as investigators and *Factors Influencing Spatial Yield and N Use Efficiency of Furrow-Irrigated Corn* with Richard Ferguson, Gary Hergert, Joel Cahoon, Todd Peterson and Carol Gotway as investigators. We look forward to the initiation of these research projects.

The University of Nebraska Water Center/ Environmental Programs has been asked by the Cooperative State Research Service and other federal agencies to develop and design a national conference on water quality and agriculture to take place in 1994. We are just beginning to think on how to do that. A planning committee will be appointed and include faculty from other states and federal agencies.

I recently attended a meeting of the National Institute of Water Resources. The association is attempting to expand funding efforts within each region (we are in the Upper Missouri Valley Region) through a new research initiative. Our region chose surface water quality and drinking water as an area of research needing expansion. Over the next year the states will be developing a research proposal to help us assess and protect the state's surface water supplies.

As Nebraska's water research programs continue to grow you will see more field demonstrations and use of improved management strategies to help protect our groundwater in a manner that will sustain productivity.

Water Current

is a publication of the Water Center/Environmental Programs at the University of Nebraska-Lincoln.
Bettina Heinz Hurst — Editor

Water Center/Environmental Programs
103 Natural Resources Hall
P.O. Box 830844
Lincoln, NE 68583-0844
Phone: (402) 472-3305
Fax: (402) 472-3574

Bob G. Volk — Director
Roy F. Spalding — Associate Director and Water Sciences Laboratory Director
Edward F. Vitzhum — Coordinator of Environmental Programs
Robert D. Kuzelka — Assistant to the Director

This newsletter is published with partial financial support from the Department of the Interior; U.S. Geological Survey. The content does not necessarily reflect the views and policies of the Department of the Interior, nor does mention of trade names or commercial products constitute endorsement by the U.S. Government.

New communications associate joins staff at UNL Water Center

Bettina Heinz Hurst

Bettina Heinz Hurst joined the Water Center/ Environmental Programs at the University of Nebraska-Lincoln as communications associate June 1.

A native and citizen of Germany, Hurst has been in the United States since 1984.

She graduated from Fort Hays (Kan.) State University with a bachelor's and a master's degree in communications and worked for two years as editor/state coordinator for Nebraskans for Peace.

After working for a short time as a reporter in Montana, Hurst returned to Nebraska last year.

Since then, she had been working as news editor of the Red Cloud Chief, a weekly newspaper in south-central Nebraska.

She has also freelanced for a number of publications such as Ag Consultant, AAA Home & Away and the Chicago Tribune.

Water tour continues education tradition

Tour.
From Page 1.

at the Buffalo Bill Cody State Park.

The Management Systems Evaluation Area near Shelton, one of five sites in the nation that are part of the Presidential Initiative on Water Quality, is also part of the tour.

One of the farms participants will visit is the Bill Vasey Farm, which is featured in the book "Flat Water — A History of Nebraska and Its Water."

22nd Tour

The first tour took place in 1974.

"It was started as an educational, informational activity to highlight water resources projects and irrigation," Sheffield said.

Since then, the tour has taken those interested in water resources and water management to a number of states including California, Arizona, North Dakota, South Dakota, Colorado, Wyoming, Kansas, Oklahoma, Texas, Oregon and Washington.

For some, the tour is an annual event not to be missed.

Deadline for registration is July 15.

Charles Schlabs, a Texas irrigation farmer, has participated in the tour for 15 consecutive years; and Sheffield himself has directed the tour since its inception.

However, each year also brings newcomers to the tour, Sheffield said.

Individuals may take part in all or part of the tour, but the bus tour, which will be accompanied by narration, can only accommodate 90 individuals. However, participants have the option of providing their own transportation to the sites.

Registrations will be taken on a first-come, first-serve basis.

A fee is charged. For a complete itinerary or more information, contact Les Sheffield, University of Nebraska-Lincoln, 304-B Filley Hall, Lincoln, NE 68583-0922, (402) 472-1773. Deadline for registration is July 15.

Coalition issues agenda

Water Quality 2000, a cooperative effort of more than 80 public and private organizations, has issued its final report, "A National Water Agenda for the 21st Century."

The 158-page report presents a consensus of recommendations for improvement in U.S. water policies reached by the coalition.

The coalition will focus on transmitting the report's recommendations to Congress, the Executive Branch, state and local governments and others during the next phase of its work.

A copy of the report is available for $25 plus shipping and handling from Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1994. Specify order number TT02 when ordering.

Michigan video illustrates local wellhead program

A new video has been produced to help communities protect municipal water supplies.

"The Michigan Wellhead Protection Program: Communities in Action" highlights the elements of local wellhead protection programs.

For rental or purchase information about the 11-minute tape contact Cindy Brewbaker, Institute of Water Research, 334 Natural Resources Bldg., Michigan State University, East Lansing, MI 48824, (517) 353-9709.

Source:Water Impacts, Michigan State University, Vol. 14, No. 4

CALENDAR

July

• **July 12-15**: "Capture-Zone Analysis for Contaminant Remediation and Wellhead Protection." Contact National Ground Water Association, 1-800-551-7379.

• **July 12-17:** Platte River Trails Workshop, Hastings, Neb. Contact: Will Locke, Hastings College, (402) 463-2402.

• **July 19-23:** Small Water Systems Design, University Park, Penn. Contact: Pennsylvania State University, (814) 865-2781.

• **July 21-23**: 22nd Annual Nebraska Water Resources and Irrigation Tour, central Nebraska. Contact: Dr. Les Sheffield, University of Nebraska-Lincoln, (402) 472-1773.

• **July 25-28**: "Comprehensive State Groundwater Protection Programs: Fact and Fiction, Orlando, Fla. Contact: Ground Water Protection Council, 827 NW 63rd, Suite 103, Oklahoma City, OK 73116, (405) 848-0690.

August

• **Aug. 1-4**: "Membrane Technology: Offering Solutions to Complex Water Quality Concerns," Baltimore, Md. Contact: American Water Works Association. Phone (303) 794-7711.

• **Aug. 9-13**: "Prairie Ecosystems: Wetland Ecology, Management and Restoration," Jamestown, N.D. Contact: Dr. Ned Euliss, U.S. Fish and Wildlife Service, Northern Prairie Res. Center, RR1, Box 96C, Jamestown, N.D. 58401.

September

• **Sept. 19-24**: First International IAWPRC Specialized Conference on Diffuse (Nonpoint Source) Pollution: Sources, Prevention, Impact and Abatement, Chicago. Contact: Dr. Vladimir Novotny, IAWPRC Conference, Dept. Civil & Envir. Engineering, Marquette University, 1515 West Wisconsin Ave., Milwaukee, WI 53223. Phone (414) 288-3524; fax (414) 288-7082.

• **Sept. 28-29**: Symposium on Agricultural Nonpoint Sources of Contaminants: A Focus on Herbicides, Lawrence, Kan. Contact: Larry Ferguson, U.S. EPA, 726 Minnesota Ave., Kansas City, KS 66101, (913) 551-7447.

October

• **Oct. 5**: University of Nebraska Water Policy Forum "Getting the Word Out," Ak-Sar-Ben Aquarium, Neb. Contact: Dr. Bob Volk, University of Nebraska-Lincoln Water Center, (402) 472-3305.

November

• **Nov. 1-3:** Fourth National Research Conference on Pesticides, Virginia Water Resources Research Center, Richmond, Va. Contact Dr. Diana L. Weigmann, Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, 617 North Main Street, Blacksburg, VA 24060-3397, (703) 231-5624.

• **Nov. 3-4**: Sixth Annual Water Quality Workshop, "Nonpoint Source Pollution — The Tualatin River as Case Study," Corvallis, Ore. Contact: Ron Miner, (503) 737-6295.

December

• **Dec. 11-15**: 55th Midwest Fish & Wildlife Conference — New Agendas in Fish and Wildlife Management: Approaching the Next Millenium, St. Louis, Mo. Contact: Wayne Porath, MO Dept. of Conservation, 1110 S. College Ave., Columbia, MO 65201. Phone (314) 882-9880.

Students issue verdict on dam

by Cheryl Alberts

LINCOLN — University of Nebraska-Lincoln students enrolled in the 1993 Water Resources Seminar series had an opportunity to decide environment vs. economics on a river-harnessing project nearly half a globe away.

Should the Danube River damming project between Hungary and Slovakia (part of the former Czechoslovakia) be completed? Now at a stalwart, the project was mutually begun in the 1970s to improve navigation, generate hydropower and prevent flooding.

All phases were scheduled for completion in 1989. Slovakia claims Hungary, seemingly without provocation, stopped its side of the project a few months before completion. Hungary claims it did so to avert environmental devastation.

Presenting both sides of the issue at the spring seminar were Miroslav Liska of Bratislava, Slovakia, and Gyorgy Samsondi Kiss of Budapest, Hungary.

In writing their abstracts, students said they thought poor organization and communication had brought the project to a standstill. Others said the citizens in both countries had been kept in the dark.

Six students sided with Hungary's position. One student was concerned about future problemsHungary might face.

Modifying a "system which has evolved over a long time and demonstrates stability should be approached with extreme caution," the student argued.

Sixteen students sided with Slovakia. One cited the benefits of hydropower, which avoids the byproducts of nuclear energy and greenhouse gasses.

Twelve students did not take sides. Some of them wrote that both countries must compromise. One wrote it would be counterproductive to dismantle the project now, wasting millions of dollars worth of material and energy.

The lecture series was sponsored by the UNL departments of Civil Engineering, Political Science and the Water Center/Environmental Programs.

Danube damming project controversial

by Cheryl Alberts

Among the dozen lecturers at the 1993 Water Resources Seminar series were two Eastern European officials discussing controversy over the Danube River dam.

Miroslav Liska, adviser for the Slovakian minister of agriculture; and Gyorgy Samsondi Kiss, with the Hungarian ministry of environment and regional policy, lectured this spring in Lincoln.

The Danube River forms a natural border between Hungary and Slovakia (part of the former Czechoslovakia). The two-dam project was initiated in the 1970s. Both countries were to share expenses. The first dam, partially in Slovakia, was completed. The second dam, totally in Hungary, remains 70 percent uncompleted. The matter has been referred to the International Court of Justice in The Hague, Netherlands, for settlement.

Kiss said stopping the project was justified because of scientific reasons. He said about 60 species of protected flowering plants are found in the area affected by the project, as are rare fungi and fish. Stopping the project, he said, averted an ecological catastrophe and protected underground drinking water supplies.

However, Liska said the drinking water is better than before because it contains more oxygen, thanks to procedures brought about by the dam project. He claims Hungarians have been kept in the dark about the project, and that the government would lose credibility if the project resumed and no environmental catastrophe occurred.

Call for papers

The University of Nebraska Water Center/Environmental Programs is issuing a call for papers for "A Symposium on the Environmental and Water Resources of the Niobrara River Basin."

The symposium is tentatively scheduled for the second or third week in October and will take place in the Niobrara River Basin area. Focus will be on the basin and adjacent areas.

The theme for the first day will be environmental and natural resource research. The second day will focus on social and economic research and will address the importance of natural resources to the people.

To present a paper or presentation, submit a 200-word abstract by July 16. For more information, contact Bob Kuzelka, (402) 472-7527 or Jerry Vandersnick, (402) 472-3305, or write to Niobrara Research Symposium, 103 Natural Resources Hall, University of Nebraska-Lincoln, Lincoln, NE 68583.

Soil and Water Sciences Tour features labs, urban water sites

by Bettina Heinz Hurst

LINCOLN — The annual Soil and Water Sciences Tour sponsored by the Soil and Water Sciences Panel of the University of Nebraska-Lincoln Department of Agronomy June 2-3 took researchers and faculty around UNL and Lincoln.

This year's tour was a first in several ways: the tour stayed at home rather than going to an extension facility, and extension agent affiliates participated in the tour.

This year, extension agent affiliates participated in the tour.

After a day-long tour of the UNL research labs, the group of about 20 participants spent the next day visiting the Lincoln well field near Ashland and touring the pumping facility with representatives of the Lincoln Water System.

Participants also listened to a presentation on near-river hydrology and pesticide leaching by Darryll Pederson, Conservation and Survey Division and Department of Geology.

They also viewed munitions disposal sites discussed soil and groundwater problems at the former Nebraska Ordnance Production Facility in Mead with Steve Comfort,UNL assistant professor of agronomy.

The tour concluded with a visit to Lincoln Water System's Theresa Street Waste Processing Facility, which was followed by a discussion of land application of sewage sludge.

Dennis McCallister, chair of the Soil and Water Sciences Panel, organized this year's tour with Daniel Walters, associate chair; and Joseph Skopp, associate professor of agronomy.

McCallister said because the tour stayed in Lincoln, it focused on an urban problem that soil scientists have expertise in — water quantity and quality.

The annual tour benefits soil sciences faculty, McCallister said, because it helps people to broaden their views as they learn about others' research.

The tour offered those working in the field a chance to see research in the lab and vice versa, McCallister said.

Study on Sandhills available

The "Sandhills Area Study" is now available from the Nebraska Natural Resources Commission.

The study was initiated because of concern over the intense development of land for center pivot irrigation in the Sandhills in the 1970s.

By 1979, local citizens and officials had become concerned about the potential effects the development had and could have on the natural resources of the Sandhills.

The Natural Resources Commission responded with a study of the area to help with the management of Sandhills resources.

Copies of the report are available by contacting the Nebraska Natural Resources Commission, 301 Centennial Mall South, Lincoln, NE 68509, (402) 471-2081.

Source: Nebraska Resources Newsletter, spring 1993

New water organization formed

The National NonPoint Source Federation, a 501(c)(3) not-for-profit organization with headquarters in Kansas City, Mo., is offering new services.

This spring, the group published the first issue of its newsletter, Runoff Report. Plans call for an electronic bulletin board to be on-line in a few months, and organizers are also planning a regional workshop and a national conference.

The goal of the Federation is to establish a central, comprehensive, accurate information base for nonpoint source pollution and watershed issues.

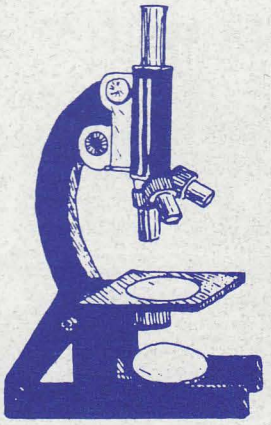
Membership regions will correspond to ecoregions.

Jim Fraser of Maryland, an aquatic biologist, was elected president of the board at its first meeting Jan. 29.

Fraser is science director for the Terrene Institute and a vice president of Dynamac Corp.

For more information, contact the National Nonpoint Source Federation, P.O. Box 30101, Kansas City, MO 64112, 1-800-795-3634.

Source: Runoff Report, Vol. 1, No. 1



Research

UNL soil scientist conducts pilot study

by Bettina Heinz Hurst

A pilot study sponsored by the University of Nebraska Water Center/Environmental Programs shows promising results in the continuous search for more accurate fertilizer application recommendations.

Principal investigator of the field experiment begun last year is Daniel Walters, UNL associate professor of soil science. Collaborating researchers are Donald Sander, professor of soil science at UNL; and Larry Bundy, professor of soil science, University of Wisconsin.

The Institute of Agricultural and Natural Resources at UNL issues fertilizer application recommendations for corn based, in part, on the amount of residual nitrates in 4 feet of soil. As the amount of residual soil nitrate increases, the efficiency of nitrogen fertilizer use declines as does the amount needed by the crop.

Researchers have not been able to pinpoint the exact amount of nitrogen fertilizer needed because they cannot predict the climate or the efficiency of the plant in taking up nitrate. The plant takes up varying amounts of nitrogen during different phases of growth. At the same time, the plant's root system develops and enables the plant to reach deeper soil levels where different amounts of soil nitrate reside.

The results of the study will be presented at the annual meetings of the Soil Science Society of America in November in Ohio.

Residual nitrate is usually found in different distributions and concentrations in the soil. These differences are not accounted for in the fertilizer application recommendation. An investigation of the distribution of nitrate and the concentration variation could lead to more precise fertilizer application recommendations, Walters said. The main reason this has not been investigated is the cost of experiments.

A large-scale experiment that would test the various potential concentration and distribution configurations of nitrate in the soil would show at what stage of growth the plant utilizes which soil level and what amount of nitrogen.

To investigate root activity and mass uptake of nitrates in corn plants, a biologically active nitrogen tracer is needed. The commonly used tracer, a nitrate isotope, is very expensive, and the cost prohibits the large-scale experiments needed. In their research, Walters, Sander and Bundy seem to have found an alternative to the commonly used tracer in bromide, which is a cheap compound.

Bromide is often used as a tracer of nitrate movement in soil but it is also readily taken up by corn plants.

"It appears very promising as a tracer of nitrogen uptake by corn," Walters said.

If Walters can secure the funds necessary, he plans to set up a large-scale experiment to examine different distributions and concentrations of nitrogen with the help of bromide.

The results of the pilot study will be presented at the annual meetings of the Soil Science Society of America, Nov. 7-12 in Cincinnati, Ohio.

FishAmerica offers grants

The FishAmerica Foundation offers grants of up to $10,000 for the following: advancing fish populations and preserving and enhancing water ways; developing conservation programs promoting fish habitat, water quality, and waterway clean-up; encouraging personal conservation measures; and presenting workshops and seminars designed to inform and encourage private and public sector involvement in key fisheries and water quality issues. There are no grant deadlines. For more information, contact Christina Altman, Grants Administrator, 1010 Massachusetts Ave. NW, Suite 302, Washington, D.C. 20001, (202) 898-0869.

Source: Arizona Water Resource, April/ May 1993

Book tells history of Nebraska and its water

A new book published by the Conservation and Survey Division of the Institute of Agricultural and Natural Resources at the University of Nebraska presents the history of Nebraska and its water through a collection of articles, sidebars, profiles, photos and maps.

"Flat Water: A History of Nebraska and Its Water"explores the varied facets of the state's water history between 1900 and 1993 in 291 illustrated pages.

Nebraska is named after a derivation of the word for the main trans-state river, the Platte — in the Oto and Omaha languages approximately "Nebraska," loosely translated as "broad, flat water." The French gave the river its present name, meaning "flat."

The book offers a "collection of people, events and tales, a record of past events and an examination of what the future might bring," says Robert Kuzelka, assistant to the director of the UNL Water Center/ Environmental Programs, in the introduction. He served as project manager for the book.

Charles Flowerday, editor of the Conservation and Survey Division served as editor, and historian Robert N. Manley served as contributing editor/ consulting historian.

More than 30 people contributed articles.

"Flat Water: A History of Nebraska and Its Water" is available from the Conservation and Survey Division, 113 Nebraska Hall, University of Nebraska, Lincoln, NE 68588-0517 for $20 plus local and state tax and $1.50 for Fourth Class postage.

Festival to celebrate state's natural resources

A 10-day event at the Nebraska State Fair this fall will highlight ties between agriculture and the environment. The University of Nebraska Water Center/Environmental Programs will participate in "Earthbound" Sept. 3-12 at the Agriculture Hall in the Nebraska State Fair Park. The festival is a joint project of the Nebraska State Fair, the University of Nebraska's Institute of Agriculture and Natural Resources, and several state departments.

WATER CENTER/ENVIRONMENTAL PROGRAMS
103 Natural Resources Hall
University of Nebraska
P.O. Box 830844
Lincoln, NE 68583-0844

NON-PROFIT ORG.
U.S. POSTAGE
PAID
Lincoln, Nebr.
Permit No. 46