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Water Current

Earth Wellness Festival Gets One of Three IANR Cooperative Extension Team Awards



DeLynn Hay, Arlene Hanna, Soni Ericksen, and Dave Varner display the plaque that was awarded to Nebraska's Earth Wellness Festival, one of three NU Cooperative Extension "Excellence in Team Programming" awards (photo: Steve Ress).

An environmental festival that has involved more than 10,000 Nebraska youth was recognized with one of three "Excellence in Team Programming" awards from NU Cooperative Extension Dean Ken Bolen.

The award to "Earth Wellness Festival" was presented in April, during the Institute of Agriculture and Natural Resources annual conference at UNL's East Campus.

Earth Wellness Festival fosters year-round opportunities for students and teachers to link environmental issues with a science-based curriculum. It is held in March. Schools receive pre-festival learning kits in October. Curriculum and materials for more than 20 activities are included in the kit.

In its first three years, more than 10,000 Lancaster County fifth graders have participated in the festival's educational activities.

The festival's steering committee represents nearly a dozen local agencies. They are: Lancaster County Cooperative Extension, City of Lincoln, The

Groundwater Foundation, Lincoln/Lancaster County Health Department, Lincoln Public Schools, Lower Platte South Natural Resources District, Nebraska Game and Parks Commission, Southeast Community College-Lincoln, NU Water Center/Environmental Programs and Ventures in Partnerships.

Festival co-chairs are Arlene Hanna and Soni Ericksen of Lancaster County Extension. Steering committee members from

NU are DeLynn Hay, Biological Systems Engineering; Don Janssen and Dave Varner, Lancaster County Extension; Bob Kuzelka, assistant to the director, Water Center/Environmental Programs; and Lancaster County Extension staff.

Awards also went to "NUFACTS," telephone technology making information available to extension clientele 24 hours a day, and the "ServSafe Food Safety" training program that was implemented in Nebraska in 1994.

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Water Resources Tour; Research Proposals

from the DIRECTOR



Bob G. Volk

I would like to remind everyone that we will not be having our annual Water Resources Tour this year, but highly recommend that everyone join the Four States Irrigation Tour to western Colorado. This should be an interesting tour of one of the oldest agricultural areas in Colorado. Additional information can be obtained from Four States Irrigation Council, P.O. Box 163, Loveland, CO 80539, or

contact Roger Sinden or Brian Werner at (907) 667-2437. Registration materials can be requested from our own Water Center/Environmental Programs communicator, Steve Ress, by phoning (402) 472-3305 or emailing sress@unlinfo.unl.edu. See the article on page five in this issue of the *Water Current* for additional details.

Decisions have been made on research proposals to be funded by the Nebraska Research Initiative and the Nebraska Mandates Management Initiative. The focus of these research proposals is on small community water systems. Since we believe constructed wetlands hold a great deal of promise for wastewater treatment, a significant portion of the funds will be targeted to research and demonstrations of various kinds of constructed wetlands and their effectiveness. The principle investigators on these projects will be Drs. John Stansbury and Wayne Woldt of the Civil Engineering and Biological Systems Engineering Departments. Another project on "In-Situ Remediation of Septic

System Nitrate Using Sulfur-Limestone Denitrification Processes," by Dr. Tiang Zhang of the Department of Civil Engineering also was funded. Other proposals were very good and upon clarification, could be funded in future years.

Along the same lines of supporting small communities, two proposals were submitted to the USDA's call for proposals under the "Fund for Rural America." One will augment and extend the current "Nebraska Management Mandates Initiative" program coordinated by Jeff Yost and the other is a planning grant that would create a regional center for small community development and assistance. Both grants were submitted under the "Partnership for Rural Nebraska."

The university is moving ahead with the School of Natural Resource Sciences. A two-year interim director will be hired to initiate and implement the many recommendations for the school.

Water Current

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Conservation Runs in the Family; Elm Creek HUA Gets Boost from Demonstration Farm

Charles Keeney belongs to the fifth generation of a family that has farmed the same 240-acre homestead on Elm Creek in Webster County since 1878.

No doubt that long, intimate history with the creek is part of what motivated Keeney to become part of the solution to the creek's problems.

Nonpoint runoff and sedimentation have been negatively affecting Elm Creek's water quality and flowing downstream to contribute to problems on the Republican River as well. Despite all this, Elm Creek has the potential to support a cold-water fishery.

To work toward that goal, Keeney and 177 other farmers are participating in the USDA's Elm Creek Hydrologic Unit Area Project (or HUA), installing conservation and sediment control practices on their farms.

The Webster County Natural Resources Conservation Service and University of Nebraska-Lincoln Cooperative Extension have helped Keeney turn his farm into a project demonstration. Using funds from a U.S. Environmental Protection Agency section 319 grant to the Lower Republican Natural Resources District (NRD), Keeney incorporated existing grass diversions and irrigation reuse systems with new grass waterways, two cement block chutes, a corrugated metal drop pipe structure and a retaining pond.

USDA decided to fund work on Elm Creek as one of 35 national HUA projects because it fulfills three criteria: 1) the watershed has problems related to agriculture, 2) its problems affect surface and groundwater sources, and 3) treatment is likely to be successful.

Now producers in the watershed use conservation practices on 70 percent of 11,000 acres of spring-planted crops and on 35 percent of 4,200 acres of fall-seeded crops.



Keeney is no exception and in addition to practicing conservation tillage, he has planted 1,750 trees and 13 varieties of shrubs. Some of his farm's acreage remains in native grass planted under the Soil Bank Conservation Program of the 1950's.

Other nonpoint source best management practices (or BMPs) commonly used on farms in the HUA project area are nutrient management, including deep soil sampling and irrigation water management.

Participating farmers have saved about \$45,000 a year and over 82,000 tons of soil since the project began in 1990. Elm Creek now also supports a trout fishery, but to Charles Keeney, it just feels right to protect the creek that is, literally, in his blood.

For more information, contact Scott Montgomery, Webster County NRCS, 20 N. Webster St., Red Cloud, NE 68970 or phone (402) 746-2268.

(From Nonpoint Source News-Notes, January/February 1997, #47, published by the Terrene Institute, Alexandria, VA)

A reprint of Nebraska Folk Humorist Roger Welsch's first book is now available from the University of Nebraska-Lincoln

"The Summer It Rained: Water and Plains Pioneer Humor"

was first published in 1978, when Welsch was an adjunct professor at UNL

Reprint copies of the rare original, produced for the **26th Annual Nebraska Water Conference**, are now available

To obtain a copy, send \$2, plus \$1.25 for shipping, handling and all applicable state and local sales taxes to:

Judy Otteman
Map Sales
Conservation and Survey Division
113 Nebraska Hall
University of Nebraska
Lincoln, NE 68588-0517

(Prepayment required, make checks payable to *University of Nebraska-Lincoln*. Contact Judy at (402) 472-7523 for questions about multi-copy purchases, over-the-counter sales, etc. \$1 from each book sold will benefit the Nebraska Water Conference Council)

Water Sciences Lab Gives Workshops



Tom Omli and Mike Carlin (right) from Geoprobe Systems of Salina, KS demonstrate "Direct push" sampling technologies at the Management Systems Evaluation Area (MSEA) site near Shelton. Their presentations were part of day-long field demonstrations in April (photo: Steve Ress).

Faculty and staff at the University of Nebraska's Water Sciences Laboratory (WSL) presented water quality workshops and field demonstrations for more than 60 people in April.

Few topics in the water quality arena were left untouched as staff from the WSL offered discussion on regulation, siting and constructing wells, monitoring and sample collection techniques, analytical methods for nitrate, gas chromatography and mass spectrometry and breakout sessions on a variety of lab and water sampling topics.

Workshops were in Ogallala, April 8 and 9 and Grand Island, April 14 and 15 to allow for wide participation across the state, said Dr. Roy Spalding, director of the WSL. Field demonstrations at the Management Systems Evaluation Area (MSEA) near Shelton were offered as an adjunct to the workshops on April 16.

Funding was by a U.S. Environmental Protection Agency (EPA) grant administered by the Nebraska Department of Environmental Quality. Funding for contributing WSL staff was by the Nebraska Research Initiative (NRI).

In addition to Spalding, presenters were Dr. Daniel Snow, lab manager; Mark Burbach, field manager; David Cassada, separations chemist; and Patrick Larsen, data manager.

Spalding opened the workshops with an historical examination of water quality projects in the state, noting how quickly "The amount and complexity of water quality sampling and analysis has increased over the past 25 years."

Much sampling and analysis are now closely tied to regulatory goals

and he predicted that some 95 former USDA Consumer Credit Corp. (CCC) managed grain elevators could be the next major EPA Superfund cleanup effort in the western Midwest.

"Many of these sites are contaminated with ethylene dibromide and carbon tetrachloride," Spalding said.

In follow-on presentations he stressed that agencies looking for a water laboratory should look for one with a well-thought-out work plan that has a solid quality assurance project plan (or QAPP) appended.

He also gave a discussion on stable isotopes of nitrogen and analytical approaches to measure them. He used published examples such as the Central Platte Source Identification Project to illustrate the proper uses of N-isotope data in source identification. He also discussed indicators of nitrate loss via denitrification in aquifers.

Spalding concluded with an update of the MSEA project, showing how geological and chemical indicators were integrated to help define the complex nature of the subsurface. Techniques included an elaborate multilevel sampler system, geological logging, nitrogen isotopes, hydroxy-atrazine determinations and others.

Snow talked about difficulties in collecting "Chemically-representative" groundwater samples. Difficulties are due, in part, to "Radically different environments in the aquifer, at the surface and within the well casing," he said.

The best approach is to collect a series of samples during purging to show whether concentrations of the compounds of interest have stabilized.

Less expensive measurements, such as pH, temperature and conductivity can be used to help judge when samples collected from a well are chemically representative (of groundwater)," he continued.

Because of low concentrations and regulatory requirements, quality assurance and controls have become even more essential in environmental analysis, the WSL manager stressed. Snow also noted that nitrate determination is probably the most common type of water analysis performed in Nebraska. He presented several current methods for determining nitrate, along with measuring natural variations of stable isotopes.

"Extremely small differences in the abundance of isotopes of an element can be precisely measured in the laboratory and used to help understand processes affecting water quality," he said.

Cassada presented workshop sessions detailing instrumentation to optimize data quality. The first of these focused on non-polar semi-volatile pesticides (such as atrazine and metolachlor) and analytical methods laboratories use for their quantification. The second presentation focused on analyses for non-volatile pesticides and munitions residues. Procedures

(See WSLWorkshop on page 8)



NU Water Sciences Laboratory manager Dr. Daniel Snow sets-up a flow cell during field demonstrations at the Management Systems Evaluation Area (MSEA) site near Shelton. The flow cell measures water conductivity, pH and temperature (photo: Steve Ress).

Blue River Basin Water Quality Team Wins IANR Initiative Award

The Blue River Basin Water Quality Team won this year's University of Nebraska Institute of Agriculture and Natural Resources (IANR) "Initiative Team Award."

The NU/Kansas State University team, reported on in the April issue of the *Water Current*, was formed last year to improve the environment in the Blue River Basin area of Nebraska and Kansas.

Team efforts focus on water quality research and education. As recipients of the IANR team award,

they received \$2,500 to help continue that work.

Among those nominating the team for the award were NU's Glenn Hoffman, head of Biological Systems Engineering department, and Bob Volk, director of the Water Center/Environmental Programs unit.

"One of the strengths of this team is that it crosses state boundaries and the solution will help both states," Hoffman said.

The team has collaborated with

NU Cooperative Extension and the Nebraska Corn Grower's Association. Field demonstrations are underway to find the best methods to manage the basin, said Hoffman.

NU surface water management engineer Tom Franti and aquatic ecologist Kyle Hoagland are IANR's lead representatives on the team's interstate coordinating committee. They are being advised by Martin Massengale, NU president emeritus and IANR agronomist.

Irrigation Council Tour to Visit Western Colorado

Montrose and the Black Canyon of the Gunnison in western Colorado are among the stops on this summer's Four States Irrigation Council water and agricultural tour.

The event begins Wednesday, Aug. 6 and concludes by noon, Friday, Aug. 8, Council President Don Schepler said.

"We hope you will consider participating in what will be an interesting tour of one of the oldest agricultural areas in Colorado. It also promises to be one of our most scenic tours in recent years," Schepler said.

The tour is also being offered in place of the annual Nebraska Water Conference Council (NWCC) tour, which will not be held this year.

"Although the NWCC is not hosting its own water tour this year, we are cooperating with and hoping to spur participation in the Four States tour," said Bob Volk, director of the University of Nebraska's Water Center/Environmental Programs.

The irrigation council is comprised of irrigators from Nebraska, Kansas, Colorado and Wyoming.

A council board meeting and mixer kick-off the Four States event Aug. 6, with tour activities starting the following day.

Among Thursday morning's stops will be the Morrow Point Dam, Chasm View/Painted Rock overlooks, the Black Canyon National Monument and east portal of Gunnison Tunnel. Tour participants will meet Bureau of Reclamation officials at Morrow Point Dam, where they will discuss the Wayne N. Aspinall Unit and Curecanti National Recreation Areas.

After lunch, Jim Hokit of the Uncompahgre Valley Water Users Association (WUA) will give an overview of the Gunnison Tunnel project before the tour moves to Crystal Dam.

At the west portal of Gunnison Tunnel, operations in the south canal will be discussed.

A barbecue hosted by the WUA concludes the day's events.

On Friday, Aug. 8, participants get a rundown of operations with the Tri-County Water Conservancy District and WUA at Ridgeway Reservoir. They will also be able to see the confluence of South Canal and Uncompahgre River and the Delta Canal Diversion Structure.

Sweet corn harvesting and packing operations in Tuxedo then precede a drive through farming areas on the return to Montrose.

Schepler cautions that tour and hotel space are limited and urges those interested to make reservations no later than June 20. Motel reservations can be made directly by phoning the Best Western Red Arrow Motor Inn (tour headquarters) (800) 468-9323, Country Lodge (970) 249-4567 or Black Canyon Inn (800) 348-3495.

Questions regarding the tour should be directed to Roger Sinden or Brian Werner at (970) 667-2437. Full tour price is \$65 per person including Thursday and Friday breakfasts, Thursday lunch and Thursday night barbecue (excludes lodging costs).

Registration forms and tour materials are also available from the Water Center/Environmental Programs by phoning (402) 472-3305.



Water News Briefs

Don't Pass the Salt, Please

Nearly 97 percent of the world's water is salty or otherwise undrinkable. Another two percent is locked in ice caps and glaciers.

That leaves just one percent for all of humanity's needs - all of its agricultural, manufacturing, community, personal and household needs.

(Source: American Water Works Association).

Information, Please

The following are some inexpensive publications and brochures that may be what you're looking for:

Groundwater and Surface Water: Understanding the Interaction is the latest in the Know Your Watershed series of watershed management guides. Explains the interaction between groundwater and surface water, threats to groundwater and watershed approaches to protecting groundwater (16-page guide). Cost \$2, call Ginger at (317) 494-9555.

If you are dealing with atrazine in your watershed, call Know Your Watershed at the phone number listed above. You can receive brochures giving an overview of atrazine, water sources, health effects and regulations, best management practices and prevention. \$1 covers mailing for both brochures.

Developing Successful Runoff Control Programs for Urbanized Areas is a comprehensive manual of strategies for communities to develop institutional frameworks for runoff control programs. Published by Northern VA Soil and Water Conservation District. The 94-page publication is available for \$10 by calling (703) 324-1460.

Your Lake and You offers simple steps you can take in your home, yard and community to protect lakes

in your watershed. The eight-page tabloid-size publication is available for \$1 from North American Lake Management Society by phoning (608) 233-2836.

The "JUG," or Just Understanding Groundwater, is a portable flow model kit available from the Groundwater Foundation. You can experiment with the JUG to create an aquifer, infiltrate it with rain, pump groundwater and "pollute" it with Kool-Aid. The kit is reusable. To order, call (800) 858-4844 (\$18.95 plus shipping and handling).

Survey Says...

A recent survey indicates significant increases in deep soil sampling and decreases in atrazine use are two influences the Mid-Nebraska Water Quality Demonstration Project's management practices are having.

During 1996, 745 people attending 16 field tours were surveyed to determine if the project was influencing management practices in south central Nebraska. "The results are very encouraging with respect to the adoption of best management practices," said Mid-Nebraska Water Quality Demonstration Project Co-coordinator Ed Barnes of NU Cooperative Extension.

A sampling from the survey indicates 68 percent have been influenced by the project's BMPs. Sixty five percent said they have decreased atrazine use since 1990 and 31 percent have increased deep soil sampling since 1990. Nearly 40 percent of respondents said they have decreased nitrogen application rates by an average of 31 pounds per acre.

The surveys are conducted annually during the project's field tours, Barnes said.

(Source: "The Water Monitor" newsletter, published biannually by the

South Central Research and Extension Center, Clay Center. For more information, contact Kim Peterson at (402) 472-3535).

Midwest Entering "Little Ice Age?"

The chairman of the atmospheric sciences department at the University of Missouri at Columbia says the midwest is entering a "little ice age" that could last for the next 15 to 20 years.

Ernest King's research has led him to conclude that North America can expect a "natural cold period for the next 20 or so years" as the jet stream pulls frigid weather from Alaska and western Canada into the midwestern states.

King said his research shows that the ocean's surface temperatures are a key factor of the world's weather. Researchers have postulated that midwestern weather is controlled by the surface temperatures of the equatorial and northern Pacific Ocean.

(Source: U.S. Water News)

Rivers and History

The Nebraska Environment Education Association (NEEA) Conference will be held at Niobrara State Park June 27-29.

This is the first in a series of conferences to "Educate yourself about Nebraska's natural resources," NEEA President Syd Hime said. There will be field trips to the Missouri River, Ashfall Fossil Beds and local wetlands explorations. Activities are designed for use in the classroom and to enhance professional growth, said Hime.

"The goal of environmental education is to encourage people to take action on behalf of the environment. To be able to do so, an awareness and appreciation has to come first," he said.

Several registration options, including family options, are available. For more information, contact Hime at (402) 476-2729 or e-mail hime@nrcdec.nrc.state.ne.us.

10-13: Aquaculture Canada '97, Radisson Hotel, Quebec City, Quebec. Write: Aquaculture Association of Canada, Box 1987, St. Andrews, NB E0G 2X0 or phone (506) 529-4766.

15-19: American Water Works Association annual conference, Atlanta, GA. Early registration dates of March 21 and May 16. Contact the AWWA, 6666 W. Quincy Ave., Denver, CO 80235. Phone (303) 794-7711. E-mail mparmele@awwa.org

18-20: Nebraska Soil and Water Conservation Society annual chapter meeting, Ramada Inn, Kearney. Call Anita Nein (308) 354-4509 or Beth Hiatt (308) 236-5555.

23-25: The U.S. Environmental Laws and Regulations Compliance Course, Albuquerque, NM. Contact Government Institutes, 4 Research Place, Rockville, MD 20850 or call (301) 921-2345 (Course also offered July 23-25, Chicago, IL and Aug. 11-13, Hilton Head, SC).

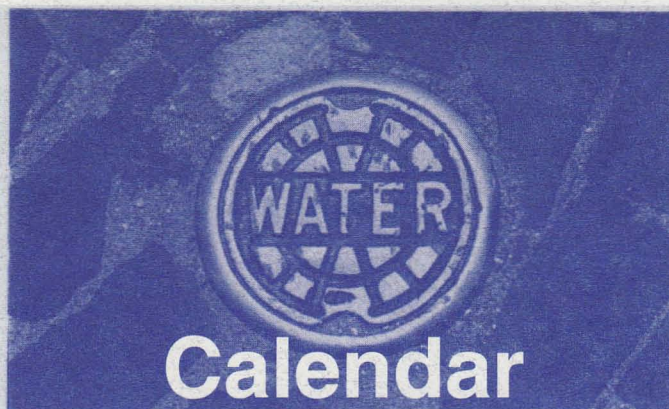
27-29: Nebraska Environment Education Association Conference, Niobrara State Park. Call Syd Hime at (402) 476-2729 or e-mail hime@nrcdec.nrc.state.ne.us.

29-July 3: Water Resources, Education, Training and Practice: Opportunities for the next Century. Keystone Resort, CO. Phone (703) 904-1225. E-mail awrahq@aol.com

JULY

13-16: Collection Systems Rehabilitation and Operations and Maintenance: Solving Today's Problems and Meeting Tomorrow's Needs. Contact Nancy Blatt or Dave Trouba at the Water Environment Federation at (703) 684-2400.

21-22: The OSHA Laws and Regulations Course: A comprehensive legal/regulatory primer, The Hilton Resort, Hilton Head, SC. Government Institutes, 4 Research Place, Rockville, MD 20850 or call (301) 921-2345.



21-24: The Clean Water Compliance Institute, Hilton Head, SC. Contact Government Institutes, 4 Research Place, Rockville, MD 20850 or call (301) 921-2345.

22-25: Soil and Water Conservation Society Annual Conference, Toronto, Ontario, Canada. Contact the Soil and Water Conservation Society, 7515 Northeast Ankeny Road, Ankeny, IA 50021-9764, or call 1-800-THE-SOIL.

23-24: OSHA Standards Made Easy: A workshop for day-to-day compliance. Contact Government Institutes, 4 Research Place, Rockville, MD 20850 or call (301) 921-2345.

AUGUST

3-6: Water Residuals and Biosolids Management Approaching 2000 and Environmental Laboratories: Moving to the 21st Century. Contact Nancy Blatt or Dave Trouba at the Water Environment Federation at (703) 684-2400 for more information.

6-8: Four States Irrigation Council water and agricultural tour, Montrose, CO. Call Roger Sinden or Brian Werner at (970) 249-4567. **14-15:** Chemistry for non-chemists. Chemistry basics for environmental health and safety specialists. Government Institutes, 4 Research Place, Rockville, MD 20850, or call (301) 921-2345.

13-14: Conference announcement and call for posters: Nutrients in the Neuse River: Working Toward Solutions. Sheraton Hotel, New Bern, NC. Sponsored by North Carolina State University, Cooperative Extension Service. Posters and exhibits on water quality research, education and management topics are being sought. If interested in presenting a poster or exhibit, contact Greg Jennings via FAX (919) 515-6772 or e-mail at greg.jennings@ncsu.edu no later than June 30.

Groundwater Protection Tools for the New Era is Symposium Topic

San Francisco, California's Parc Fifty-five Hotel will host this September's Groundwater Foundation Annual Fall Symposium examining groundwater protection tools.

Programs and processes for protecting groundwater have been accelerated with passage of the new Safe Drinking Water Act (SDWA) last August. That makes the foundation's fall symposium on Sept. 3 and 4 a unique opportunity to focus on ways the new SDWA impacts groundwater.

"Increased emphasis on risk management, pollution prevention and public involvement are all aspects of the new law which provide definite groundwater benefits," the foundation said in a statement on the symposium.

The symposium's goal is to help those caring about groundwater assume greater personal and community responsibility for its protection.

National experts in risk management, federal officials and citizen activists will make presentations. Workshops, case studies and panel discussions on how to use SDWA regulations, resources, and programs to increase the effectiveness and efficiency of groundwater protection will be offered.

Registration deadline Aug. 31. Call The Groundwater Foundation at 1-800-858-4844 or (402) 434-2740 for registration materials or additional information.



Enrique Burgos Garcia, Governor of Queretaro, Mexico, opens The Second Annual International Conference for the Protection of Aquifers in Queretaro City. Keynote speakers included Bob Kuzelka (second from left), assistant to the director, University of Nebraska Water Center/Environmental Programs. Kuzelka also represented the co-sponsoring Groundwater Foundation. Attendees were welcomed by Jose Alfredo Zepeda (third from right), president of the Autonomous University of Queretaro. The university is active in the "Groundwater Guardian" program and was a designated community in 1996 (photo: Janet Bonet).

Record Number of Sites to Recycle Pesticide Containers

A record number of locations will help producers, ag chemical applicators and dealers turn plastic pesticide containers into useful products, according to the University of Nebraska's pesticide coordinator.

Empty, rinsed and dried plastic pesticide containers can be taken to a record 52 recycling sites in 27 Nebraska counties this year, said Larry Schulze of UNL's Water Center/Environmental Programs.

"I like to think of this program as a true success story as a new industry in Nebraska. It is now in it's sixth year and has been steadily growing each year."

—Larry Schulze

Of those sites, seven are available for collection year-around, 21 will accept containers during the use season and 24 will be available only on certain dates. Contact local cooperative extension offices for more details.

"I like to think of this program as a true success story as a new industry in Nebraska. It is now in it's sixth year and has been steadily growing each year," he said. Schulze estimates about 10 percent of the state's

roughly one million empty pesticide containers are recycled each year through the statewide NU Cooperative Extension program.

"It is a tremendous effort and one that wouldn't be successful without the help of extension educators, ag chem dealers, local governments, volunteers and many other organizations across the state."

The program accepts rinsed and dried one and two and a half gallon plastic pesticide containers. These are later ground into small plastic chips which are then made into such products as fence posts, shipping pallets, parking lot bumpers and new pesticide containers.

Container grinding by Tri-Rinse, Inc. of St. Louis, MO. will take place from July 7-18 and again from Aug. 25 to Sept. 12, said Schulze. Tri-Rinse's involvement in the program is supported by contributions from a national coalition of agri-chemical manufacturers through the Agricultural Container Research Council.

Containers must be triple-rinsed, or pressure-rinsed to remove any pesticide residues. Lids and plastic label wraps must be removed. Complete guidelines for recycling the containers are available from local cooperative extension offices.

WSL Workshop (from page 4)

used by laboratories to define various detection limits were included.

He also gave an overview of high performance liquid chromatography (or HPLC) and a review of HPLC analysis of RDX and other munitions-related residues.

Larsen spoke on related topics of data management and the "Nebraska Groundwater/Pesticide Data Clearinghouse." He emphasized good data management strategies and fundamentals.

Field topic sessions presented by Burbach homed-in on both traditional and state-of-the-art methods of groundwater investigations. Some of the topics he presented included an examination of the importance of siting wells based on project objectives and site characterization, as well as advantages and disadvantages of different drilling techniques, well development methods and sampling devices.

Like many of his colleagues from the WSL, Burbach stressed quality assurance and controls to the success of a monitoring program.

He facilitated a demonstration of "Direct push" (DP) sampling technology at the MSEA site by Geoprobe Systems of Salina, KS.

"This is a very rapidly growing method of shallow subsurface investigation using push or percussion to advance a wide range of small diameter monitoring tools. It is a very cost effective and environmentally sound method," said Burbach.

Soil, groundwater and soil gas samples can all be quickly retrieved using the DP technology and associated tools.

The workshops applied toward continuing education units (CEUs) under the Nebraska Water Well Standards and Contractor's Licensing Act.

WATER CENTER/ENVIRONMENTAL PROGRAMS

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