

October 2002

Water Current, Volume 34, No. 5. October 2002

Follow this and additional works at: http://digitalcommons.unl.edu/water_currentnews



Part of the [Water Resource Management Commons](#)

"Water Current, Volume 34, No. 5. October 2002" (2002). *Water Current Newsletter*. 19.
http://digitalcommons.unl.edu/water_currentnews/19

This Article is brought to you for free and open access by the Water Center, The at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Water Current Newsletter by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Fall NSIA/NWRA Convention Focuses on “Changing Times / Changing Attitudes”

The UNL Water Center has joined with the Nebraska Water Resources Association (NWRA) and Nebraska State Irrigation Association (NSIA) in sponsoring next month’s annual NSIA/NWRA convention.

“Changing Times/Changing Attitudes” is at North Platte’s Sandhills Convention Center, Sunday, Nov. 24 through Tuesday, Nov. 26. A registration mailing has been sent to NWRA and NSIA members, along with those on the Water Center’s *Water Current* mailing list. If you did not receive this mailing, contact the NSIA in Lincoln at (402)476-0162 or the Water Center at (402)472-3305.

Invited keynote speaker is John Keyes, Commissioner of Reclamation, U.S. Bureau of Reclamation. Several convention topics will focus on the Bureau’s 100th anniversary (see a summary of Bureau projects in Nebraska and eastern Wyoming elsewhere in this issue). A “Reclamation Projects Panel” moderated by Fred Ore, general manager of the Bureau’s Kansas-Nebraska office, kicks-off convention topics at 9 a.m. on Monday, Nov. 25.

Senator Don Pederson is Monday’s luncheon speaker; Ernie Niemi, Vice President of ECONorthwest, speaks early Monday afternoon; and Lower Platte South NRD general manager Glen Johnson will moderate a “Municipal-Industrial Panel.”

General sessions resume on Tuesday with “Natural Resources District Panel, moderated by Nebraska Association of Resources Districts general manager Dean Edson.

Later that morning, Tim Anderson of Central Nebraska Public Power and Irrigation District

moderates a “Water Policy Issues Form that will feature State Senator Ed Schrock and Nebraska Department of Natural Resources director Roger Patterson. Dave Cookson of the Nebraska Attorney General’s Office will also update those attending on state water litigation.

Congressman Tom Osborne is slated to be Tuesday’s luncheon speaker.

The convention adjourns after an early afternoon NWRA board of director’s meeting.

100 Years of Reclamation



Plains farmers survey their land in western Nebraska, probably in the teens or 1920’s. Exact date unknown. U.S. Bureau of Reclamation projects to “reclaim” the arid western lands and control flooding were in large measure responsible for Nebraska’s agricultural successes. As the Bureau of Reclamation celebrates its Centennial this year, look inside this issue for the history and details of the projects it built in Nebraska and eastern Wyoming. (USBR photo).

(continued on page 13)

INSIDE

3..... *Meet the Faculty*

4..... *Guest Column*

5 - 11 *SPECIAL BUREAU OF RECLAMATION CENTENNIAL COVERAGE*

14..... *Water News Briefs*

15..... *Calendar*

16..... *Bottled Water or Tap?*

Celebrating 100 Years of Reclamation

from the DIRECTOR



J. Michael Jess

In 1820 Major Stephen H. Long led an exploration party across Nebraska to the Rocky Mountains. Based upon his observations, he concluded the land he saw was “uninhabitable by a people depending on agriculture.” As Americans headed west several decades later, Long’s sentiment disappeared. Following the Civil War, cheap land and a coincidental period of above normal precipitation resulted in abundant

harvests. “Rainfall follows the plow,” was said to explain the successes of early homesteaders. With a return to normal precipitation patterns, that theory was soon discredited.

During the 1880s and 1890s farmers in the Platte, Frenchman and Niobrara river valleys recognized the true climatic environment in which they lived, and they began building a network of irrigation canals. Before long they realized their cumulative demand for water often exceeded the magnitude of river flows. During July and August, when crop water requirements are greatest, irrigators recalled the undiverted river flows that had passed their canal headgates the previous spring.

An obvious solution was to construct upstream reservoirs to impound springtime runoff. Water held in storage upstream could later be released to supplement meager summer time river flows.

That obvious solution became the political objective for Nebraskans and others promoting arid land reclamation across the west. Their efforts finally paid off with passage of Rep. Francis Newlands’ (D-Nev.) Reclamation Act. On June 17, 1902, the bill was

enthusiastically signed by President Roosevelt. Construction of several reclamation projects began shortly afterward. One of the first was the North Platte Project, located in eastern Wyoming and in the panhandle of western Nebraska.

Since completion of that project, Nebraska has benefited from construction of many other reclamation projects. Elsewhere in this issue of *Water Current*, each project is discussed and depicted on a map.

This year marks the centennial year for passage of the Reclamation Act. In effect it’s the 100th birthday for the U.S. Bureau of Reclamation. A national birthday party was held at Hoover Dam earlier this year.

Locally, Nebraska’s celebration is planned for North Platte. The program for a joint meeting of the Nebraska State Irrigation Association, the Nebraska Water Resources Association and the Nebraska Water Conference Council will highlight reclamation activities and projects in our state. Watch for the registration announcement and please join those making plans to attend the November 25 and 26 festivities in North Platte.

WATER CURRENT

*Water Center
University of Nebraska-Lincoln
103 Natural Resources Hall
Lincoln, NE 68583-0844
Phone: (402) 472-3305
Fax: (402) 472-3574
E-mail: sress1@unl.edu*

<http://watercenter.unl.edu>

*Kyle D. Hoagland - Director
J. Michael Jess - Acting Director
and Water Specialist
Mark S. Kuzila - Director,
Water Sciences Laboratory
Steven W. Ress - Editor
Patricia A. Liedle - Editorial Assistant
Anne M. Moore - UNL CIT,
Layout and Design*

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.

Meet the Faculty

Dr. Joe Szilagyi

Hydrologist and research assistant professor, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

Education:

Ph.D. in Hydrologic Science, University of California-Davis, 1997.



Joe Szilagyi

M.S. in Hydrology, University of New Hampshire, 1994.
B.S. in Meteorology, Eotvos University, Budapest, Hungary, 1989.

Samples of Current Research:

- Mapping statewide long-term evaporation, baseflow and recharge to groundwater in Nebraska.
- Detecting an intensification of the global hydrologic cycle as a result of climate change.
- Investigating the long-term regional water balance of the Republican River valley.
- Validating a new analytical solution of the Boussinesq equation for describing seepage of groundwater to open channels.
- Applying vegetation indices for areal evaporation estimations.
- Building a semi-distributed watershed model in aiding livestock management with regard to Cryptosporidium contamination

of surface waters.

- Developing new methods for baseflow separation.
- Applying GIS technology to water management issues.

Samples of Current Projects:

- Modeling capture zones in well-head protection areas (Nebraska Department of Environmental Quality), 2000.
- Update and revision of regional 1x2 degree watertable configuration maps for the State of Nebraska (NDEQ), 2000.

Samples of Current Extension and Outreach Programming:

- Assisting the involved parties in the Rainwater Basin study.
- Assisting Natural Resource District personnel in water management issues.

(continued on page 12)

C. Dean Yonts

Irrigation Engineer and Associate Professor of Biological Systems Engineering Department, University of Nebraska-Lincoln (since 1980). Located at the UNL Panhandle Research and Extension Center, Scottsbluff, NE.



C. Dean Yonts

Education:

M.S. in Ag Engineering, University of Wyoming, 1978.
B.S. in Ag Engineering, University of Wyoming, 1974.

Samples of Current Research:

- Current research and extension programs focus on improving water management techniques to conserve water and maintain water quality for both surface and groundwater sources. Specific research projects include the following:
 - Methods to improve sugarbeet emergence using center pivot irrigation.
 - Early and late season water management of dry bean and sugarbeets.
 - Use of polyacrylamide to reduce sediment loss from furrow irrigation.

- Member of team to develop chicory as a new crop in the United States.

Samples of Current Extension Programming:

- Editor of *Irrigators News Line* distributed to the North Platte Valley irrigators.
- Coordinator for annual North Platte River Basin Water Policy Conference.
- State coordinator for annual Central Plains Irrigation Short Course conducted with Kansas and Colorado.
- Member of specialist team to conduct annual crop Management Workshop for agribusiness personnel.
- Surge irrigation demonstration project with the U.S. Bureau of Reclamation.

(continued on page 12)

Both Blues Fall Below State-line Minimums

By Keith A. Paulsen,
Lincoln Field Office Supervisor,
Nebraska Department of Natural Resources

“You are going to have to shut off your irrigation pump” is the last thing irrigators want to hear on a hot dry afternoon, particularly when they have spent many hours of work and hundreds of dollars for fuel during the last six weeks trying to keep their corn crop alive. Many irrigators who rely on the water flowing in the streams of the Big and Little Blue River Basins were told to shut off their pumps this year. Some of them

The Big Blue River Basin in Nebraska extends from Hastings to the state line south of Beatrice, encompassing 4,450 square miles in all or parts of 15 counties; has 1,022 surface water irrigation permits; and 328 storage permits. The Little Blue’s headwaters are near Minden, and the river exits the state south of Fairbury. The basin encompasses some 2,700 square miles in all or parts of 10 counties. It has 347 irrigation permits and 127 storage rights.

In 1971 Nebraska entered into the Kansas-Nebraska Big Blue River Compact, which apportions the waters of the Big and Little Blue Rivers between Kansas and Nebraska. Among other things, the compact sets out state-line target flows during the months of May through September on both rivers. Nebraska agreed that whenever the targets were not being met that the junior users (a junior user as set out in the compact is any use permitted after November 1, 1968) will be closed, and senior uses held to their permit limits.

Since adopting the compact in 1971, Nebraska has had to administer water rights on the Little Blue River due to state-line flow shortages, only twice before this year, in 1988 and 1991. This was the first year that regulation of water rights in the Big Blue Basin was necessary in order to satisfy state-line flow requirements.

Little Blue Administration

Above normal temperatures and below normal rainfall in the Little Blue River Basin increased the demand for irrigation and decreased the supply. By July 18, the flows on the Little Blue had fallen below the compact target, and the 187 junior irrigation rights and the 127 storage rights in the basin were closed. The 160 senior irrigators in the basin were allowed to continue operating but were closely regulated. The notices were mailed and then followed up with field investigations to assure compliance. Due to some heavy rain, which fell in basin,

by July 29 the flow at the state-line exceeded the compact target flow, and the basin was opened to junior irrigators and storage rights. The close/open sequence was repeated in August and again in September.

Big Blue Administration

Dry conditions also occurred in the Big Blue River Basin. Localized shortages requiring water rights regulation on the upper end of the Big Blue started on July 11. By July 19, it was clear that unless the basin received significant rainfall that the flows were going to go below the state-line target on the Big Blue River.

Contact with the Lower Big Blue NRD indicated that the NRD was open to the possibility of releasing water from some of their reservoirs to satisfy the state-line minimums to avoid the closing of junior irrigators in that basin. Kansas was receptive to this idea and agreed to give this proposal a chance. From July 23 to July 29, the Lower Big Blue NRD released up to 94 cfs from four of their reservoirs in southern Gage County. These releases allowed the junior irrigators an extra week of irrigation at a critical time. The NRD went out of their way and greatly helped the surface water irrigators in the Big Blue Basin through their voluntary reservoir releases.

Runoff from intense storms increased the flow above the target until August 5. At that time, 547 junior irrigators were closed, and additional storage of water in the 328 storage reservoirs in the basin was prohibited. The 475 senior irrigation permits in the basin were regulated to their permit limits. The junior rights remained closed until August 13 when rainfall runoff again put us over the state-line target flow. Subsequent rains in the Big Blue Basin kept the state line flow above the compact target the remainder of the irrigation season.

Conclusion

In southeast Nebraska it is very unusual to have it rain so little for so long over an area as large as one of these basins. To have it occur in both basins at the same time indicates just how extensive the drought was in southeast Nebraska this summer. The cooperative attitude shown by the Lower Big Blue NRD came at a critical time for the irrigators in the Big Blue Basin and most certainly took some of the bite out of the drought for many. Unless more normal weather patterns in the area return, it could prove to be another rough year for Big and Little Blue River Basin irrigators in 2003.

Reclaiming Land Across the Arid West

Less than 30 years after his trek to survey the western states in 1867, John Wesley Powell's expeditions and advocacy of water development helped lead Congress to action that helped turned the west into an agricultural breadbasket for the world.

Powell, widely considered to be the father of reclamation, and his supporters, including Buffalo Bill Cody, realized that large scale development of irrigation projects in the arid western states would be needed to fully realize the agricultural potential of the Great Plains.

Farmers in Nebraska, Wyoming and other states west of the Missouri River continually battled alternating droughts and floods in trying to break western lands to the plow. Their collective voice for stable supplies of water reached new heights in the 1890's, when a drought struck settlers so hard that many of them gave up their dreams of settling the land.



Construction of the south end of the conduit of Minatare Dam, September, 1913 (USBR photo).

Congress responded by passing the Reclamation Act of 1902, establishing the U.S. Reclamation Service within the U.S. Geological Survey (USGS). The new service wasted little time beginning irrigation projects to "reclaim" the western lands. About 30 of them, including the North Platte Project and many others in the Missouri River Basin, were being built within five years of the act's passage.

By 1907 the Reclamation Service was separated from the USGS and created as an independent bureau within the U.S. Department of the Interior.

The work to irrigate the west continued, but often encountered problems with lack of funds, unprecedented engineering challenges, lack of knowledge about soils under irrigation, land speculation and uncertainty of repayment of the projects by irrigators.

Still, the work went forward, with unprecedented drought in the 1930's spurring further development.

These early years of the 20th century were when many of Nebraska's reclamation projects were developed, including the Inland lakes, Frenchman-Cambridge Project and many others.

These early projects began solely for the benefit of irrigation and it often wasn't until later that other benefits such as flood control, municipal water, hydropower and, more recently, fish and wildlife habitat issues were considered.

From the beginning, it was planned that irrigators would repay the federal government the cost of building the projects, and a repayment agreement was required before project construction began.

An example of how programs developed to meet competing water use demands was the Pick-Sloan Missouri River Basin Program of 1944. This was a compromise between the Bureau and the U.S. Army Corps of Engineers that had competing missions and plans for water development in the Missouri River Basin. The program, which was a response to the severe drought and flooding cycles in the basin, divided responsibilities with the Corps developing mainstem reservoirs, primarily for flood control and hydropower and the Bureau developing tributaries for multiple use with an emphasis on irrigation. This ongoing compromise has had a huge impact on projects developed in Nebraska.

Nebraska continues to benefit from the many irrigation and multiple use projects developed by the Bureau. The western two-thirds of the state, in particular, have benefited from the reclamation of thousands of acres of cropland, cheap and clean hydropower generation, flood control, and recreational aspects of these enduring projects.

On the following pages, the Bureau's projects in eastern Wyoming and Nebraska are detailed, including looks at the irrigation districts that run them and the area offices that administer them.



Teams of horses and men excavate brule clay from the cut-off trench at Minatare Dam in May, 1913 (USBR photo).

Bureau of Reclamation Develops Irrigation and Flood Control Projects Across Nebraska

The Bureau of Reclamation changed the face of agriculture, flood control and recreational opportunities in many parts of Nebraska with the development of irrigation units. Many of these units were developed in direct response to the drought years of the 1930's, as well as horrific flooding of the Republican River in 1935.

Ainsworth Unit

When it was developed after World War II, the Ainsworth Unit was designed to supply irrigation water for Brown and Rock Counties.

Unit water comes from the Snake River and is stored in Merritt Reservoir for release into the Ainsworth Canal, where it is conveyed to irrigate project lands. Average annual irrigation diversion requirements to provide a full supply of water for the nearly 34,000 acres of irrigable acres is 102,000 acre-feet (an acre-foot being equivalent to 325,851 gallons).

Merritt Dam and Reservoir is on the Snake River about 14 miles upstream from its confluence with the Niobrara River, in Cherry County, southwest of Valentine. The reservoir has a capacity of nearly 68,000 acre-feet and surface area of 2,906 acres.

The dam empties into the Ainsworth Canal, which extends east through the Sandhills to project lands. The canal is concrete lined for its entire 53-mile length and has an initial capacity of 580 cubic feet per second (cfs). There are nearly 170 miles of laterals delivering irrigation water off this canal.

Bostwick Division

The U.S. Army Corps of Engineers began developing irrigation plans for the Lower Republican River area in the drought and depression years of the early 1930's. The work was stepped-up in part due to unprecedented flooding in 1935. In 1943 the Bureau of Reclamation

released a report for comprehensive flood control and irrigation development of the basin in what is now known as the Bostwick Division.

The division extends from Orleans to Concordia, KS, and includes land on both sides of the Republican River. It helps irrigate 104,240 acres in seven counties.

Water for the Bostwick Division is stored in Harlan County Lake and the Lovewell Reservoir which divide the division into two areas: the Bostwick in Nebraska and the Kansas-Bostwick in Kansas. The Nebraska area is 24,240 acres divided into two units: Franklin and Superior-Courtland.

The Franklin Unit is served by the Franklin and Naponee Canals, which divert water from Harlan County Reservoir, as well as by the Franklin South Side Pump Canal, which receives water directly from the river. The Superior-Courtland Unit is served by the Superior and Courtland Canals, which originate at the Superior Courtland Division Dam on the Republican River.

Harlan County Dam was completed by the Corps of Engineers in 1952. The lake's storage capacity is more than 840,000 acre-feet. Of that, more than 500,000 acre-feet are allocated for flood control and 200,000 acre-feet for irrigation.

There are two diversion outlets in the dam to serve the Franklin Unit. The first is the Franklin Canal extending almost 48 miles to the east, paralleling the Republican River; the second is the Naponee Canal, extending east from the dam on the south side of the river.

The Superior-Courtland Diversion Dam is on the Republican River three miles west of Guide Rock. The canal begins at the north side of the dam and extends 30 miles east to the state line. It supplies water to 5,863

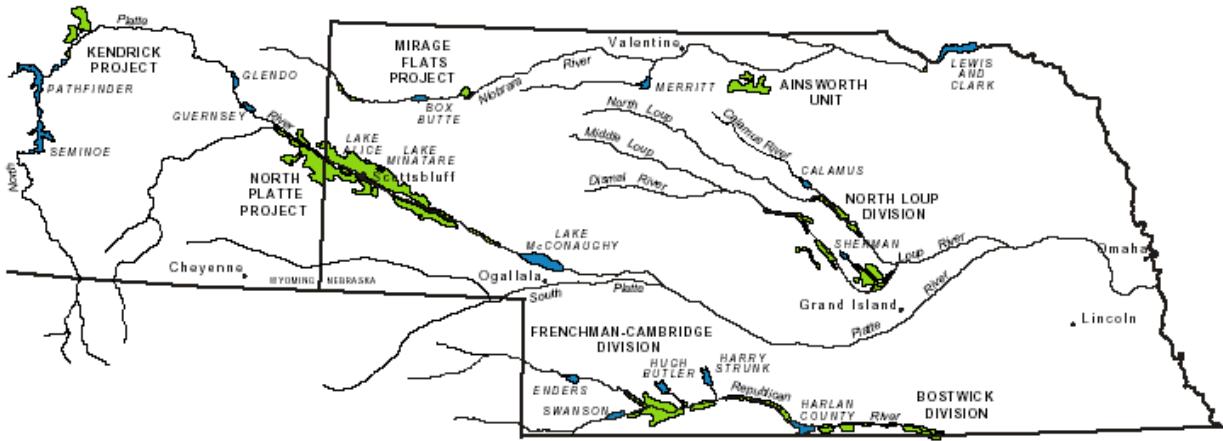
(continued on page 10)



North sluice gates of Whalen Dam with interstate diversion gates in the background. View looking upstream from construction. Date unknown (USBR photo).



One of the many irrigation canals and laterals laboriously built in Nebraska in the early part of the 20th century to help irrigate more croplands (USBR photo).



The North Platte Project in Wyoming and Nebraska

The North Platte project extends 111 miles along the North Platte valley from Guernsey, WY, to Bridgeport. The project provides irrigation to about 226,000 acres divided into four irrigation districts. It also provides a supplemental irrigation service to eight water-user associations serving a combined 109,000 acres.

Primary features of the project include Pathfinder Dam and Reservoir, Guernsey Dam and powerplant, Whalen Diversion Dam, Fort Laramie Canal, Interstate Canal and Reservoir System, and the Northport Canal.

Storage structures for the North Platte project are interspersed along the North Platte River and require close coordination of operations. These operations are further complicated by agreements and laws governing water rights. Use and quantity of water are allocated for certain defined purposes — some on a priority basis, some on a proportionate share basis, and some on a geographical source basis.

Primary water use is for irrigating about 390,000 acres of cropland in the following four irrigation divisions: Interstate, Fort Laramie, Northport and Storage. Two-thirds of the project's irrigated lands are in these divisions; the remaining one-third, about 100,000, acres, are represented by nine districts and canal companies receiving water under Warren Act contracts.

The North Platte Project includes 1,602 miles of canals and laterals and 352 miles of open drains.

Structures

North Platte River water passes the Seminole and Kortess Dams before entering Pathfinder Reservoir, which impounds flow from the Sweetwater River. The reservoir has a storage capacity of more than one million acre-feet (an acre-foot being equivalent to 325,581 gallons), and is the primary holding facility for North Platte Project water.

During the irrigation season, water is released from the reservoir as required, including water from Seminole Reservoir diverted at Alcova Dam for irrigation use on the U.S. Bureau of Reclamation's Kendrick Project.

Pathfinder (completed in 1909) was one of the very first dams built by the U.S. Reclamation Service and is

located about three miles below the North Platte River's junction with the Sweetwater River, and about 47 miles southwest of Casper, WY. The dam was built from granite quarried from nearby hills.

Guernsey

Guernsey Dam is used to control river flow. Water released from Pathfinder Reservoir can be stored in this reservoir and then released to satisfy irrigation demands. The water is released through the dam's powerplant. Guernsey Dam is located in a rocky canyon two miles from Guernsey, WY. The reservoir's original capacity of 73,810 acre-feet has been reduced by siltation to about 46,000 acre-feet. The powerplant has two 2,400 kilowatt generators.

Whalen Diversion Dam and Fort Laramie and Interstate Canals

Water for the North Platte Project has been diverted from the river by the Whalen Diversion Dam since 1909. Water is diverted on the south side of the river into the Fort Laramie Canal and on the right side of the river into the Interstate Canal. The dam is about eight miles below Guernsey Dam.

(continued on page 11)



Construction on the Guernsey powerplant in January, 1927 (USBR photo).

The Glendo Unit in Wyoming

Investigations leading to the Glendo Unit began in 1944 under the Flood Control Act of that year. The primary purpose of the unit was envisioned as storage capacity of about 150,000 acre-feet in Glendo Reservoir to replace capacity lost to sedimentation in Guernsey Reservoir, reregulation of return flows from upstream irrigation and for flood control and hydropower generation.

Later investigations recommended increasing the size of the reservoir to 798,000 acre-feet for more effective hydroelectric power production and better flood control of the North Platte River Valley in Wyoming and Nebraska below Glendo Reservoir. More than one-third of Glendo's reservoir capacity is designated exclusively for flood pool storage.

The dam and reservoir were completed in 1958 and the Fremont Canyon Powerplant was finished in 1961. Glendo furnishes a maximum of 40,000 acre-feet of water annually for irrigation. About 38 percent of that water is used in Wyoming, the rest in Nebraska. Nine private irrigation districts with a combined size of nearly 164,000 acres hold long-term contracts for Glendo water.

A small reregulating dam called Gray Reef also is part of the Glendo Unit. It ensures a continuous flow of water downstream of Alcova Powerplant. Gray Reef was also completed in 1961.



Building Pathfinder Dam in August, 1907. The dam was completed in 1909 (USBR photo).

Two Area Offices Manage Nebraska and Wyoming Projects

Reclamation projects covered in this issue are administered by area offices in Nebraska and Wyoming.

The Wyoming Area Office in Mills, WY, manages the Boysen, Glendo, Hanover-Bluff, Kortez, Owl Creek and Riverton units of the Pick-Sloan Missouri Basin Program; the Shoshone Project in the Bighorn River Basin; and the North Platte and Kendrick Projects in the North Platte River Basin.

The office has a control system for operation of the federal dams and powerplants on the North Platte and other rivers in Wyoming. The office administers projects supplying water to 43 irrigation

entities which collectively serve more than 580,000 acres of land and eight municipal and industrial contractors, as well as providing for hydroelectric power, flood control, fish and wildlife, and recreation.

Contact: **Wyoming Area Office, P.O. Box 1630, Mills, WY 82644, phone (307)261-5671, Fax (307)261-5683** (area office manager: John Lawson).

The Nebraska-Kansas Area Office, in Grand Island, manages projects in Nebraska and Kansas, except the North Platte Project and the Wichita Project in Kansas.

The office manages six units of the Pick-Sloan Missouri Basin Program in Nebraska: Ainsworth,

Farwell, Frenchman-Cambridge, North Loup, Sargent and Bostwick, and the Mirage Flats project.

Nebraska projects provide water for 509,000 acres of farmland. Reservoirs in Nebraska provide 25,000 acres of water surface and 40,000 acres of adjacent land for public use. The reservoir areas are managed by the Nebraska Game and Parks Commission for fish and wildlife, and recreation purposes.

Contact: **Nebraska-Kansas Area Office, P.O. Box 1607, Grand Island, NE 68802, phone (308)389-4622, Fax (308)389-4780** (area office manager: Fred Ore).

Irrigation and Reclamation Districts and Water Supply Companies

The Bureau of Reclamation delivers irrigation water to croplands in the Nebraska and Wyoming project areas, detailed elsewhere in this issue, through a number of irrigation districts specifically established for that purpose.

These districts include the following:

Ainsworth Irrigation District, Ainsworth, managed by Harlin D. Welch. President Brent Johnson, vice-president Chester Wilkins and secretary-treasurer Donald Fling.

Bostwick Irrigation District, Red Cloud, managed by Michael Delka. President W.E. Bean, vice-president-secretary James Miller and treasurer-assessor Walter Knehans

Farwell Irrigation District, Farwell, managed by Thomas L. Knutson. President Dale Nowak, secretary-treasurer Arlan Hostetler and assessor James Stanczyk.

Frenchman-Cambridge Irrigation District, Cambridge, manager by Roy L. Patterson. President Ralph Best, vice-president Robert Wallen and secretary Robert Andrews.

Frenchman Valley Irrigation District, Culbertson, managed by Don Felker. President Kenneth Albert, vice-president Clarence Jankovits, Jr., secretary-treasurer Jerry Kotschwar.

Frenchman Valley and H & RW Irrigation District, Culbertson, managed by Don Felker. President Roger Kolbet, vice-president Kenneth Albert and secretary Debra Swanson.

Gering-Ft. Laramie Irrigation District, Gering, managed by Rick Preston. President Edwin Neuwirth, vice-president Jonny Dillman, Jr., and secretary-treasurer Julie Hawley.

Mirage Flats Irrigation District, Hay Springs, managed by Brett Skinner. President Terrance Terrell, vice-present Ross Alcorn and secretary-treasurer Nancy Rasmussen.

Sargent Irrigation District, Sargent, managed by Thomas L. Knutson. President Clifford Hanna, secretary Randy Treptow and assessor Bernard Ritchie.

Twin Loups Irrigation District, Scotia, managed by Ronald Wolf.

President Joseph C. Novotny, assessor Dean G. Thede and secretary-treasurer Merlyn Schudel.

H & RW Irrigation District, Culbertson, managed by Don Felker. President Roger Kolbet, secretary Debra Swanson and treasurer Don Ruggles.

Pathfinder Irrigation District, Mitchell, managed by Dennis Strauch. President Mick Lookabill, vice-president Fred Kinghorn and secretary-treasurer Margaret Harriger.

Northport Irrigation District, Bridgeport. President Jimmie J. Jensen, Jr.

Other districts holding contracts to purchase water impounded in Bureau reservoirs include Farmers ID, Scottsbluff; Bridgeport ID, Bridgeport; Brown's Creek ID, Broadwater; Central ID, Scottsbluff; Chimney Rock ID, Bayard; Central Nebraska Public Power and Irrigation District, Holdrege; Enterprise ID, Scottsbluff; Gering ID, Gering; Mitchell ID, Mitchell; and Beerline ID, Broadwater.



Husker Harvest Days

Governor Mike Johanns visits with extension pesticide coordinator Larry Schulze (center) at September's annual Husker Harvest Days in Grand Island. University of Nebraska-Lincoln extension and research programs were well represented at the annual event, including the UNL Water Center (photo: Steve Ress)

Bureau of Reclamation Develops Irrigation and Flood Control Projects Across Nebraska

(continued from page 6)

acres north of the river. The Courtland Canal system also extends from the dam, serving almost 2,000 acres in Nebraska. The canal discharges into Kansas' Lovewell Reservoir.

Farwell Unit

Most irrigable land in Howard County had been settled by 1890. This, coupled with the drought and economic depression of the 1930's, created a need for additional irrigation development.

The unit's most prominent feature is Sherman County Dam and Reservoir. The reservoir holds more than 68,000 acre-feet of water with a surface area of 2,845 acres. The dam is on Oak Creek, about four miles northeast of Loup City.

Another prominent unit feature is the Arcadia Division Dam.

The Sherman Feeder Canal is just over 19 miles long and has a capacity of 850 cfs. The Sherman Feeder Tunnel is 2,053 feet long with a diameter of nearly one foot and has a capacity of 850 cfs.

The Farwell Main and Lower Main Canals have a combined length of 37.5 miles and an initial capacity of 960 cfs. In addition to these are the Farwell Central Canal, the Farwell South and Upper South Canals. Farwell Main and Lower Main laterals total slightly more than 105 miles in length. The Farwell Central Lateral systems totals more than 46 miles in length. The Farwell South and Upper South Lateral system is just under 1103 miles long.

The Farwell Unit is one of two units comprising the Middle Loup Division of the Pick-Sloan Missouri Basin Program. The other is the Sargent Unit. The Farwell Unit covers parts of Custer, Sherman, Valley and Howard Counties.

Sargent Unit

About 100 miles northwest of Grand Island on the Middle Loup River is the Sargent Unit, the majority of which is in Custer County, with smaller portions in Valley and Blaine Counties.

The unit began with formation of the Sargent Irrigation District in 1939, with plans to irrigate 25,000 acres in the Middle Loup Valley. Several unsuccessful attempts were made to secure funding for the district, leading local leaders to form the Loup Basin Reclamation District in 1950 with support from the Bureau under the Pick-Sloan Missouri Basin Program.

A primary feature of the unit is the Milburn Diversion Dam, completed in 1956. The dam diverts water into the Sargent Canal and distribution system.

The 39.6-mile Sargent Canal also was completed in 1956. Associated with it is the Sargent Lateral System, totaling 44.6 miles of laterals and more than 30 miles of drains.

The Sargent Unit helps irrigate 14,000 acres of cropland, in addition to providing a range of recreational activities.

Mirage Flats Project

The Mirage Flats Project is on the Niobrara River in northwest Nebraska. It includes Box Butte Dam and Reservoir, Dunlap Diversion Dam, and Mirage Flats Canal and associated distribution and drainage systems. The project diverts water from the Niobrara River to irrigate about 1,670 acres of land on the north bank of the river, about 12 miles south of Hay Springs.

Nebraska's 1930-36 drought renewed interest in irrigation development in the area. Subsequent Bureau investigations led to a 1939 report advocating the project.

Box Butte Dam has a reservoir capacity of 31,060 acre-feet. About eight miles downstream is Dunlap Diversion Dam. Mirage Flats Canal extends from the Dunlap Diversion Dam to the beginning of irrigable land, or about 13 miles. There are four main laterals in the distribution system, totaling about 47 miles in length.

In recent years, the Nebraska Game and Parks Commission acquired title to a portion of Box Butte Reservoir, somewhat altering the way the project is managed.

North Loup Division Project

Early settlers in the area were plagued with grasshoppers, insufficient rainfall, and recurring droughts. Attempts to irrigate the land led to formation of several irrigation districts, the largest being the North Loup River Public Power and Irrigation District. Later, the Twin Loups Irrigation District (organized in 1958) was formed as Nebraska's entity to operate the Bureau of Reclamation's North Loup Division.

The project, which was one of the last irrigation projects built by the Bureau of Reclamation, includes Calamus Dam and Reservoir, Kent Diversion Dam, Davis Creek Dam and Reservoir, five principal canals, and associated pumping stations and laterals.

Calamus Dam is on the Calamus River, about 5.5 miles northwest of Burwell. The river canal can discharge about 7,220 cfs into the Mirdan Canal and about 450 cfs can be released through the river outlet into the Calamus River.

Davis Creek Dam and Reservoir is about six miles southeast of North Loup. It is located in Jack's Canyon, about four miles above its confluence with Davis Creek, a tributary to the North Loup River. The reservoir is a storage and regulating facility with the Fullerton Canal being the sole outlet from the reservoir. It supplies about 53,000 acres of irrigable land.

Davis Creek Dam and Reservoir fills from the Mirdan Canal and supplies water to the Fullerton and Elba Canal systems.

Frenchman-Cambridge Division

The 1935 Republican River flood that influenced development of the Bostwick Division also led, in large measure, to formation of the Frenchman-Cambridge Irrigation District in 1946. The Frenchman-Cambridge Division is in southwest Nebraska, from Palisade southeastward along the Frenchman River and from Trenton eastward along the Republican River to Orleans and Alma.

Irrigation and flood water storage is in Enders Reservoir and Swanson, Hugh Butler and Harry Strunk Lakes. They and their associated irrigation systems provide storage to irrigate and provide flood control for more than 66,000 acres of land along the Republican River and its three tributaries: the Frenchman River, and Red Willow and Medicine Creeks.

Irrigation releases are made from all the reservoirs for diversion into downstream canal systems, with additional irrigation releases made from Swanson Lake into the Meeker-Driftwood Canal.

Enders Dam and Reservoir, Trenton Dam and Swanson Lake, Red Willow Dam and Hugh Butler Lake, and Medicine Creek Dam and Harry Strunk Lake are located on the Frenchman River, Republican River, Red Willow Creek and Medicine Creek, respectively.

Culbertson Diversion Dam and Culbertson Canal and laterals in the Frenchman Valley Irrigation District were privately built prior to the turn of the 20th century. In the 1950's, the diversion dam was rehabilitated, and the canal was enlarged to add a supplemental water supply for 9,600 acres to carry water to the Culbertson Extension Canal, serving 1,490 acres in the Hitchcock and Red Willow (H&RW) Irrigation District.

Some 45,000 acres in the Frenchman-Cambridge Irrigation District are served by the Meeker-Driftwood, Red Willow, Bartley, and Cambridge Canal systems.

Total length of canals in the division is more than 205 miles, with an additional 181 miles of laterals and 35 miles of subsurface drains helping to distribute water to the farms.

Prominent features of the district include the following:

Enders Dam, located about a mile and a half south of Enders.

—Trenton Dam: Located on the Republican River near Trenton. It releases water to the Upper Meeker Canal to serve lands in the Meeker-Driftwood Unit. These lands are along the southside of the Republican River from the dam to about eight miles east of McCook.

—Meeker Canal system: The Upper Meeker Canal begins at Trenton Dam and extends more than 15 miles along the south side of the Republican River to just south of Culbertson, serving the Meeker-Driftwood Unit. The Driftwood Canal begins at the end of the Upper Meeker Canal and extends south, southeasterly and northeast on the south side of the Republican River Valley to within eight miles east of McCook. Remaining canals in the system include: Driftwood West,

Driftwood Sub and Meeker Extension, have a total length of about 27 miles.

—Red Willow Dam (High Butler Lake): Located on Red Willow Creek about six miles northwest of Indianola and built in 1963. It diverts water into the Red Willow Canal serving lands in the Red Willow Unit, north of the Republican River. the canal is more than 24 miles long and serves more than 4,900 irrigated acres.

—Bartley Diversion Dam and Canal System: The dam is on the Republican River about two miles southeast of Indianola and was finished in 1954. The Bartley Canal, originating at the dam, supplies water to part of the Red Willow Unit south of the river. It is 19.4 miles long and serves 6,539 irrigated acres.

—Medicine Creek Dam (Harry Strunk Lake): The dam is on Medicine Creek two miles west and seven miles north of Cambridge. Harry Strunk Lake is formed by the dam.

—Cambridge Diversion Dam and Canal System: the diversion dam is on the Republican river about two miles east of Cambridge and was finished in 1949. The canal begins at the dam and extends more than 49 miles along the Republican River to Harlan County Reservoir, serving more than 17,000 acres in the Cambridge Unit.

The North Platte Project in Wyoming and Nebraska (continued from page 7)

The Fort Laramie Canal winds its way for 129 miles to an area south of Gering, delivering irrigation water along the way. The canal was built between 1915 and 1924.

The Interstate Canal was built between 1905 and 1915. It follows the land for 95 miles to Lake Alice and Lake Minatare Reservoirs (part of the Inland Lakes). The 35-mile long High-Line Canal extends from Lake Alice to the southwest.

Northport Canal

The Northport Canal is a continuation of the privately built Tri-State Canal, which is part of the Farmers Irrigation District. Water in the

Northport Canal was designed to irrigate more than 16,000 acres of cropland in the Northport Division. The canal is 27 miles long.

Inland Lakes

The Inland Lakes, east of Scottsbluff, were created to store and facilitate timely irrigation water deliveries. They also provide critical wildlife habitat and recreational opportunities. They include Lake Minatare, Lake Winters Creek, Lake Alice, and Little Lake Alice.

The largest of the four is Lake Minatare with a surface area of 2,160 acres and 12 miles of shoreline. Lake Winters Creek lies northwest of Lake

Minatare and has 379 surface acres of water and about four miles of shoreline.

Lake Alice, named for Alice Roosevelt, one of President Theodore Roosevelt's six children, is the second largest of the lakes with a reservoir capacity of 752 surface acres and six miles of shoreline. Little Lake Alice, lying between Lake Alice and Lake Winters Creek is the smallest of the Inland Lakes. It has about 180 acres of surface water and less than four miles of shoreline.

Construction on the Inland Lakes began in 1910 and was completed with construction of Lake Winters Creek in 1917.

Meet the Faculty

Dr. Joe Zailagy (continued from page 3)

Teaching:

Guest lecturer in the Civil Engineering Department:

- Hydrology (Undergrad/Grad), course #353/853, Fall semester, 1999.
- Introduction to Water Resource Engineering (Undergrad), course #352, Spring semester, 1999, 2000.

Publications:

- Szilagy, J., 2001. "Modeled areal evaporation trends over the conterminous United States," *Journal of Irrigation and Drainage Engineering*, 127(4): 213-218.
- Szilagy, J., 2001. "On Bouchet's complementary hypothesis," *Journal of Hydrology*, 146: 155-158.
- Summerside, S. and J. Szilagy, 2001. "Configuration of the water table, circa 1995, 1x2 degree Valentine Quadrangle, Nebraska," Conservation and Survey Division, UNL.
- Szilagy, J., 2001. "Identifying the cause of declining flows in the Republican River, USA," *Journal of Water Resources Planning and Management*, 127(4): 223-230.
- Szilagy, J., 2000. "Can a vegetation index derived from remote sensing be indicative of areal transpiration?," *Ecological Modelling* 127: 65-79.

- Szilagy, J., 1999. "Streamflow depletion investigations in the Republican River Basin: Colorado, Nebraska and Kansas," *Journal of Environmental Systems*, 27(3): 251-263.
- Szilagy, J. and M.B. Parlange, 1999. "Defining watershed-scale evaporation using a Normalized Difference Vegetation Index," *Journal of the American Water Resources Association*, 35(5): 1245-1255.
- Szilagy, J. and M.B. Parlange, 1999. "A geomorphology-based semi-distributed watershed model," *Advances in Water Resources*, 23: 177-187.
- Szilagy, J., 1999. "On the use of semi-logarithmic plots for baseflow separation," *Ground Water*, 37(5): 660-662.
- Szilagy, J., M.B. Parlange, G.G. Katul and J.D. Albertson, 1999. "An objective method for determining principal time scales of coherent eddy structures using orthonormal wavelets," *Advances in Water Resources*, 22(6): 561-566.

Web address:

<http://csd.unl.edu/csd/programs/water.html>

C. Dean Yonts (continued from page 3)

- Subsurface drip irrigation project with the U.S. Bureau of Reclamation.

Samples of Research and Extension Publications:

- Yonts, C.D., B.L. Benham, J.M. Blumenthal and R.B. Ferguson, (in review). Polyacrylamide Effect on Irrigation and Sediment Yield." *Transactions of the ASAE*.
- Yonts, C.D., J.A. Smith, and R.G. Wilson, 2002. "Evaluation of Cover Crop System for Sugarbeet Production Under Furrow Irrigation." *Journal of Sugar Beet Research. Journal of American Society of Sugar Beet Technologist* 39(1-2):25-35.
- Wilson, R.G., J.A. Smith, and C.D. Yonts, 2001. "Influence of Glyphosate and Glufosinate on Weed Control and Sugarbeet Yield in Glyphosate-Resistant and Glufosinate-Resistant Sugarbeet." *Weed Technology Weed Tech.* 16:pp66-73. Journal Series No. 13329.
- Yonts, C.D., B.L. Benham, D.E. Eisenhauer, C. Burr, and W.L. Kranz, 2001. "Adapting a College Credit Course to Extension Programming Needs." *Journal of Extension* 39(5). Online <http://www.joe.org/joe/2001october/iw5.html>.

- Yonts, C.D. and D.E. Eisenhauer, 2000. "Firming Irrigation Furrows to Improve Irrigation Performance." NebGuide G97-1340.
- Yonts, C.D., W.L. Kranz and D.L. Martin, 2000. "Application Uniformity of In-Canopy Sprinklers." NebGuide G97-1337.
- Yonts, C.D., W.L. Kranz and D.L. Martin, 2000. "Water Loss from Above-Canopy and In-Canopy Sprinklers." NebGuide G97-1328.
- Wilson, R., B. Desprez, J. Smith and D. Yonts, 1999. "Effect of Drying on the Carbohydrate Composition of Chicory Roots." European Fructan Association. Eighth Seminar on Inulin, Lille, France, pp. 14-21.
- Yonts, C.D., J.A. Smith and R.G. Wilson, 1999. "Effect of Seed Coating, Planter Type and Depth of Planting on Sugarbeet Emergence." *Journal of Sugar Beet Research*, 36(4): pp. 1-9, Journal Series No. 12381.
- Yonts, C.D., R.G. Wilson and J.A. Smith, 1999. "Influence of Planting Date on Stand, Yield and Quality of Sugarbeet." *Journal of Sugar Beet Research*, 36(3): pp 1-14. Journal Series No. 12218.

Web address:

cyonts1@unl.edu

Fall NSIA/NWRA Convention Focuses on “Changing Times / Changing Attitudes”

(continued from page 1)

Both the NSIA and NWRA will conduct board of director meetings during the convention, as well as the annual membership meeting for the NWRA.

Tentative convention agenda:

Sunday, November 24:

7 p.m. NSIA Board of Directors Meeting

Monday, November 25:

8 a.m. NSIA Membership Annual Meeting
Registration Opens

9 a.m. General Session — “Reclamation Projects Panel”
Moderator: Fred Ore
Dennis Strauch, Pathfinder ID
Ron Wolf, Twin Loups ID
Jim Miller, Nebr. Bostwick ID

10:15 a.m. Refreshment Break — Exhibit Area Opens

11:00 a.m. General Session Resumes
Welcome: Association President Ron Bishop
Welcome: Mayor of North Platte
Presentation of Colors
Keynote Address: John Keyes, Commissioner of Reclamation

12 Noon Luncheon
Moderator: John Turnbull, Upper Big Blue NRD
Speaker: Senator Don Pederson

1:30 p.m. General Session — “The Sky Will Not Fall”
Ernie Niemi, Vice President, ECONorthwest

3:00 p.m. Refreshment Break — Exhibit Area

3:45 p.m. General Session — “Municipal — Industrial Panel”
Moderator: Glen Johnson, Lower Platte South NRD
Jerry Obrist, Lincoln Water System
Tom Wurtz, Omaha
Stan Staab, Upper Elkhorn NRD, Small Project
Gary Mader, Cities and Villages

5:15 p.m. Adjourn

6:00 p.m. Refreshments — Exhibit Area

7:00 p.m. Dinner
Moderator: Demaris Johnson

Tuesday, November 26:

8:00 a.m. NWRA Annual Membership Meeting
Exhibit Area Opens — Coffee

9:00 a.m. General Session — “Natural Resources District Panel”
Moderator: Dean Edson, NARD
Mike Mosel, Republican River Basin
Dick Mercer, Central Platte River Basin
Ted Wehrbein, Lower Platte South Basin

10:30 a.m. Refreshment Break — Exhibit Area

11:00 a.m. General Session — “Water Policy Issues Forum”
Moderator: Tim Anderson, CNPPID
Senator Ed Schrock — Water Policy Task Force
Roger Patterson — NE Nat. Res. Dept., Natural Resources Development Fund
David Cookson — Status of Litigation

12:15 p.m. Lunch
Moderator: Eric Brown
Speaker: Congressman Tom Osborne

1:30 p.m. NWRA Board of Director Meeting.



Construction of Minatare Dam in western Nebraska, like many early Reclamation projects, included having to elevate skips containing gravel into a hopper that screened the gravel. This photo dates to November, 1912. For perspective, that's little more than seven months after the ocean liner RMS TITANIC struck an iceberg and sank in the North Atlantic (USBR photo).



It's almost hard to imagine that many plains settlers were still living in sod houses like this one when the U.S. Reclamation Service began building major irrigation projects in Nebraska and eastern Wyoming in the first decade of the 20th century (USBR photo).



AND THE RAINS CAME. Despite enduring drought conditions in the Lincoln area this year, torrential rains caused flash flooding in many areas of the Capitol City on Aug. 28 as seen in this photo.



Water News Briefs

Free Tabloids

Copies of *Wetlands-Understanding a Resource (1997)* and *Drinking Water-Understanding a Resource (1999)* remain available at no charge from the UNL Water Center.

Organizations wanting copies for educational use or general distribution may obtain copies of either or both publications at no cost, providing they make arrangements to pick them up at our UNL East Campus office. If copies are shipped to you, you will be asked to pay actual shipping/ mailing costs. Call the Water Center at (402)472-3305 or email sress1@unl.edu. For a list of other free publications available through the UNL Water Center, go to <http://watercenter.unl.edu>.

Free Directories

The UNL Water Center has a pocket-size directory of federal and state agencies, Natural Resources Districts and NU water research and cooperative extension offices designed to help answer your water-related questions. Listings are by telephone and FAX number. If you would like a copy, phone (402)472-3305 or email sress1@unl.edu. Copies will be distributed on a first-come, first-served basis.

Mailing List Updates

No updates will be made to the *Water Current's* mailing list until at least October and possibly as late as January, 2003 due to the UNL Water Center's office supervisor being on maternity leave. If you have a change to your mailing label or wish to request a subscription for someone

else, please continue to submit those changes, as they will be filed for updating as soon as the office supervisor returns.

If you have questions about this or need to submit a new subscription, change of name or change of address, email your questions or mailing label changes to sress1@unl.edu.

Water Center, Conservation and Survey Division 2003 Calendar

The UNL Water Center and Conservation and Survey Division (CSD) have teamed on a free 2003 wall calendar celebrating the two University of Nebraska unit's dedication to water use, development and conservation.

Calendars will be available by late October. Those interested in obtaining one can do so by contacting the UNL Water Center, P.O. Box 830844, University of Nebraska, Lincoln, NE 68583-0844, emailing sress1@unl.edu or phoning (402)472-3305. Calendars will be distributed one per request on a first-come, first-served basis while supplies last.

The free wall calendar has been produced in simple black-and-white featuring monthly photographs of water-related scenes from both the state's distant and more recent pasts. Many of the photographs date from the first decades of the 20th century.

"We didn't anticipate water being such a timely topic with this year's drought, but it is interesting that within the UNL system, these two organizations, along with Biological Systems Engineering, probably have had the most to do with the development or irrigation and irrigation best management practices in the state," said Water Center acting director and CSD associate director Michael Jess.

Though CSD has previously produced and distributed calendars, this is the first such joint venture between the two units.

In addition to the importance of water in Nebraska's development, the calendar also celebrates the coming merging of UNL's School of Natural Resource Sciences and CSD, a move that will further strengthen natural resources education, research and outreach programming within NU's Institute of Agriculture and Natural Resources.

OCTOBER

21-24: International Conference on Contaminated Soils, Sediments, and Water: "Expediting and Economizing Cleanups," Amherst, Mass. Contact Denise Leonard, Environmental Health Sciences, N344 Morrill, University of Massachusetts, Amherst, MA 01003, phone (413)545-1239, FAX (413)545-4692, email dleonard@schoolph.umass.edu or online at <http://www.UMassSoils.com>.

23: 13th Annual South Platte Forum, "Who's Running This Ecosystem," Raintree Plaza Conference Center, Longmont, CO. Contact Jennifer Brown at (970)213-1618, email conferenceplanner@msn.com or online at <http://southplatteforum.colostate.edu>.

27-30: The Geological Society of America 2002 annual meeting, Colorado Convention Center, Denver, CO. For details, go to <http://www.geosociety.org/meetings/2002/>.

29-30: Colorado Nonpoint Source Forum, "Restoring Impaired Waters: Tools For Tomorrow," Colorado Springs, CO. For information, contact Jennifer Brown at (970)213-1618 or email conferenceplanner@msn.com.

NOVEMBER

2: Central Region Woodland Stewardship Conference, Lied Conference Center/Arbor Day Farm, Nebraska City. Optional pre-conference walking tours are Nov. 1. Address questions to Dennis Adams at (402)472-5822.

3-7: American Water Resources Association (AWRA) annual conference, Philadelphia, PA. For information, go to www.awra.org or contact Harriette E. Bayse at (540)687-8390.

5-7: Nebraska chapters Soil and Water Conservation Society (SWCS) regional workshop, "Excellence in Conservation Planning," Lied Conference Center, Arbor Day Farms, Nebraska City. For information or to register, call John Beckwith at (402)437-4090 or Craig Derickson at (402)437-4068 or go to <http://incolor.inetnebr.com/doug/swcs/>

6-7: Virginia Water Research Symposium 2002: "Drinking Water Supplies Assessment and Management Strategies For the 21st Century," Sheraton Richmond West, Richmond, VA. For information, contact Judy Poff at (540)231-8030 or jupoff@vt.edu.



6-8: Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Assessment, and Remediation Conference and Exposition, Atlanta, GA. Sponsored by the American Petroleum Institute and National Ground Water Association. Contact Dawn Guth, National Ground Water Association, 601 Dempsey Road, Westerville, Ohio 43081, phone (800)551-7379, FAX (614)898-7786, email dguth@ngwa.org or online at <http://www.ngwa.org>.

7-8: Conference on Water Law: "Water Regulation, Quality and Use in the Midwest," Embassy Suites Hotel and Convention Center, Lincoln. For information, go to <http://www.cle.com/upcoming/elinwat02.shtml>, or phone CLE International at (800)873-7130.

11-12: NASULGC 2002, 115th Annual Meeting, Chicago, IL. Call the National Association of State Universities and Land Grant Colleges at (202)478-6050 or online at <http://www.nasulgc.org>.

12-13: Nitrate in Groundwater Symposium. Fresno, CA. Contact: Kathy Snelson, Exec. Dir, Groundwater Resources Association of California, 915 L St., Ste. 1000, Sacramento, CA 95814. phone (916)446-3626, FAX (916)442-0382, email executive_director@grac.org or online at <http://www.grac.org/nitrate.html>.

18-20: Groundwater: The Forgotten Element of Watershed Protection, Eugene, OR. Contact Cindy Kreifels at The Groundwater Foundation (800)858-4844, (402)434-2740 (Lincoln) or email cindy@groundwater.org.

21-24: Midwest Environmental Education Conference and Leadership Clinic, Andersen Center for Professional Education, St. Charles, IL. For information, visit <http://www.eeai.net/>.

24-26: Nebraska State Irrigation Association/Nebraska Water Resources Association annual conference "Changing Times/Changing Attitudes," Sandhills Convention Center, North Platte. To register, or for information, contact the NSIA at (402)476-0162.

DECEMBER

9-11: Ground Water Expo: "From Science to Technology," Las Vegas, NV. Contact Bob Masters, National Ground Water Association, 601 N. Dempsey Rd., Westerville, OH 43081, phone (800)551-7379, email rmasters@ngwa.org or online at <http://www.ngwa.org>.

JANUARY, 2003

15-16: "The Scientific, Regulatory and Cultural Factors Underlying Water Issues in Tropical Pacific Islands," Pagoda Hotel, Honolulu, HI. Sponsored by the University of Hawaii Water Resources Research Center. For information, contact Peter Rappa at (808)956-3974 or email wrrc@hawaii.edu

MARCH

18-20: Fifteenth Annual South Dakota Department of Environment and Natural Resources Environmental and Ground Water Quality Conference, Ramkota River Center, Pierre, SD. Abstracts are being accepted until Feb. 1, 2003. For information on general topics and program format, contact Gary Haag at (605)773-5855 or email gary.haag@state.sd.us.

APRIL

23-25: Sixth National Mitigation Banking Conference. For information, go to www.mitigationbankingconference.com or phone (800)726-4853.

Making The Choice Between Bottled Water or Tap Water

by Carol McNulty,
University of Nebraska Cooperative Extension,
Douglas and Sarpy Counties

While most Nebraskans rely on tap water, an increasing number are using the bottled variety for their primary source of drinking water.

Publicly supplied tap water concerns including safety, taste, color and odor are on the rise. While tap water may be safe, the presence of dissolved substances may make the water undesirable for some people. When deciding between bottled or tap water, consumers need to remember both sources have advantages and disadvantages and are regulated to ensure quality and safety.

Sharon Skipton, a University of Nebraska Cooperative Extension educator in Douglas and Sarpy Counties, says bottled water can come from a variety of sources, including wells, protected springs or a public water supply.

The U.S. Food and Drug Administration (FDA) regulates the public water supply. The FDA also randomly tests bottled water imported from foreign countries. To ensure that FDA standards are met, bottling companies regularly test their products.

Nearly all bottled and public tap water contains dissolved substances. However, the water can't contain more than allowable levels of any given substance.

FDA rules for bottled water don't apply to water that is packaged and sold within the same state. These waters are unregulated in about one in five states.

Skipton says water bottled and sold in Nebraska is regulated by the Nebraska Department of Agriculture and must meet FDA bottled water standards. If a pro-

ducer bottling and selling water in Nebraska is in full compliance with regulations, their water should be suitable for drinking.

Tap water is supplied through a distribution system and is intended for human use. Tap water can come from a public system that provides water to at least 15 service connections, or at least 25 people, or a private water supply that serves fewer than 15 service connections, or less than 25 people.

The U.S. Environmental Protection Agency (EPA) regulates publicly supplied tap water. FDA and EPA regulations are essentially the same, with a few minor exceptions.

All public supplies are required by the Safe Drinking Water Act to be tested on a scheduled basis. Public suppliers must submit water samples to an approved laboratory for testing.

If the water from a public system isn't safe to drink, the local water supplier is required to notify users and provide information on alternative sources of drinking water. Just as with bottled water, there is always some risk of contaminants going undetected between testing intervals.

In Nebraska, tap water from a private supply isn't regulated, which means private water supply owners and users must determine if the water is safe to drink.

(Editor's Note: University of Nebraska Cooperative Extension NebGuide G02-1448-A, Drinking Water: Bottled or Tap?, January, 2002, by Sharon O. Skipton, DeLynn Hay and Julie A. Albrecht is available free at local county extension offices. The publication provides additional details on the regulation and safety of drinking water from various sources).

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

ADDRESS SERVICE REQUESTED



Printed with soy ink on
15% post-consumer recycled paper

Non Profit
U.S. Postage
PAID
Permit 46
Lincoln NE