GROUNDWATER PROTECTION

PRIVATE DRINKING WATER WELLS

STORM WATER RUNOFF

University of Nebraska Lincoln EXTENSION

Urban water

Urban/Peri-Urban Water Needs, Programming and Impact

Omaha is Nebraska's largest city.

According to the 2010 Census, Omaha's population was 408,958, making it the nation's 42nd largest city. Including its suburbs, Omaha formed the 60th largest urban/or metropolitan area in the United States, with an estimated population of 865,350. No other Nebraska city is included in the list of 100 largest cities or metropolitan areas.

There are more than ½ million residents within a 50-mile radius of Omaha's center, forming the Greater Omaha area. This includes Omaha's peri-urban area; the belt of non-urban land fringing the metropolitan center. This area is neither fully urban nor rural. It is an area most often developed for acreage living.

The need for water education in the Greater Omaha area is as diverse as its residents. **University of Nebraska-Lincoln Extension** programming focuses on surface water and groundwater protection and water conservation.

Peri-Urban Onsite Wastewater (Sewage) Treatment

Acreage residents in Omaha's peri-urban fringe most often are served by a private sewage treatment system.

Onsite systems recycle treated sewage back to the environment, most often to groundwater. This groundwater often supplies private drinking water wells upon which acreage residents rely.

It is critical that sewage be treated to a high enough quality before being recycled to groundwater. Properly designed, installed, and maintained systems can treat sewage to protect groundwater and drinking water.

Peri-Urban Onsite Wastewater (Sewage) Treatment

UNL Extension programs include primer classes for individuals preparing to sit for onsite wastewater certification exams and continuing education training for certified professionals.

Certified professionals are required to obtain 12 hours of continuing education every two years. **UNL Extension** provides the vast majority of this training, reaching between 300 and 400 professionals every year.

A follow-up survey of 315 professionals trained in 2010 indicated 99 percent reported a better understanding of system sizing and layout; consistent with pre-post test scores, (n-55). One third of the participants changed how they designed and installed systems and three fourths changed how they educated system users. These participants annually impact about 3,427 systems that return 599,725 gallons of treated sewage to the environment each year.

Extension programs provide continual access to UNL information for system users.

- The water.unl.edu/sewage web site averaged 110 visits per week
- Septic system operation and maintenance guide is printed on toilet paper (Developed by UNL Extension, distributed to customers through contractors)

Annual Impact: 3,427 Private Systems Returning 599,725 gallons of treated sewage to the environment.

Peri-Urban Drinking Water

The quality of public water supplies is regulated by the U.S. Environmental Protection Agency, and all public water supplies in the Omaha area meet minimum standards. The quality of private drinking water wells that serve most families in the peri-urban area is not regulated by state or federal statutes.

Peri-urban residents must voluntarily have their water tested, and treated if necessary. **University of Nebraska–Lincoln Extension** programs target consumers for drinking water education with an emphasis on access to information at **http://water.unl.edu/** and **http://acreage.unl.edu/**.

Individuals downloaded drinking water information through the water website nearly 59,000 times during a 12 month period to make informed management decisions. In addition, a drinking water Question/Answer segment is included in the monthly online issues of **acreage.unl.edu**, which is viewed approximately 1,500 times each month.

A recent survey of readers indicated 53% thought drinking water information was important. Thirty-seven percent (N-25) had adopted a new practice and 50% (N-34) had continued a best management practice (practices were not all water-related.) Currently, we have been awarded a two-year $25,000 NE Well Drillers Association grant in support of development of additional consumer information on private drinking water wells and wellhead protection.

Urban Surface Water Quality

The Omaha area is fortunate to have several surface water lakes which were developed for flood control, but which also offer exceptional recreational opportunities.

University of Nebraska – Lincoln Extension programs focus on maintaining or improving surface water quality in metro area lakes.

Programs educate residents on the negative impacts of stormwater runoff and stormwater runoff pollution and ways to reduce these impacts.

Urban Surface Water Quality Workshops:

374 Engineers, Government Employees, Inspectors

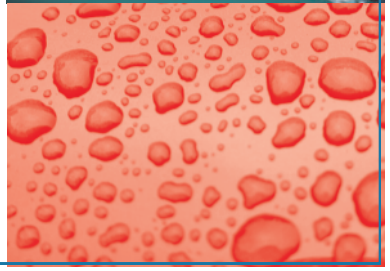
- 85% improved or much improved their understanding of sediment erosion control requirements
- 71% felt more or much more confident in ability to meet sediment and erosion control requirements
- 86% considered themselves to have improved or much improved understanding of stormwater pond maintenance
- 84% believed they had improved or much improved understanding of bio-retention maintenance

Urban Residential Education:

- 425 youth attended a youth water festival
- 340 adults attended classes
- 625 residents received the Nebraska Watersheds News and Views quarterly electronic newsletter
- 174 website visits accessed the on-line rain barrel instructions

UNL Extension Trains Industry Professionals

- On-site wastewater certification
- Government engineers, employees, inspectors
- Green industry professionals



Urban and Peri—Urban Water Conservation

Many urban/peri-urban homeowners maintain their landscapes in a non-sustainable manner. Practices often waste water and are likely to cause contamination of groundwater and Omaha area lakes. This issue is addressed through University of Nebraska – Lincoln Extension programs targeting green industry professionals and homeowners.

A three-part series focusing on water conservation and water protection was conducted for green industry professionals in the greater Omaha area.

Follow-up surveys indicated 89% of industry professionals adopted new sustainable practices.

Examples included making irrigation system repairs, sweeping or blowing fertilizer products from driveways and other impervious surfaces to label approved portions of the landscape, aerification, mulch application, performing water infiltration tests, using a soil probe to teach clients about percolation rates, irrigation scheduling, and site analysis for water efficiency.

Adoption of sustainable practices by industry professionals has a built-in multiplier effect as they work with multiple customers.

Homeowners were educated through demonstration gardens, radio and television, the water.unl.edu/landscapewater web site, and the acreage.unl.edu web site.

Demonstration gardens, in particular, illustrate sustainable landscape management techniques and encourage their adoption by Omaha area residents.

To measure behavioral change resulting from one demonstration garden in Omaha, a survey measuring adoption of 15 specific practices was distributed to participants.

Overall, a 69% rate of adoption was realized. Individual visits to demonstration gardens remain the backbone of homeowner educational efforts.

http://water.unl.edu/

http://acreage.unl.edu/

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