

# Groundwater Management: QUALITY

## Deep Soil Sampling (Vadose Samples)

*District-wide*

**A**s part of the groundwater regulations, the Upper Big Blue NRD personnel perform deep soil sampling at each of the eight monitoring well sites every five years. The purpose is to collect data regarding nitrate levels in the soil, as well as the direction and speed the leaching nitrates travel. Vadose sampling up to 30 feet deep was conducted during the 2008 fiscal year at all eight dedicated monitoring well sites.

***Sam Keezer and Russ Gierhart have taken numerous soil samples as deep as 30 feet to generate accurate readings of soil nitrates at these greater depths.***



## Chemigation Safety Equipment Inspection Program

*District-wide*



***Jon Reiter, Upper Big Blue NRD Water Resources Technician, demonstrates a chemigation safety inspection on a mainline check valve at CROP-TIP.***

**C**hemigation is the application of fertilizers, pesticides and other agricultural chemicals through an irrigation system, usually a center pivot.

According to the Nebraska Chemigation Act, anyone who chemigates must first receive a permit from his or her local NRD.

Before a chemigation permit is issued, the NRD must inspect the chemigation safety equipment. The safety equipment, which includes check valves and automatic shut-off devices, is necessary to prevent chemicals from accidentally back-flowing into the well and contaminating groundwater.

***Continued***

## Chemigation Safety Equipment Inspection Program (cont.)

**E**ach permit application must list the name of the person who will operate the chemigation equipment. Only certified chemigators are allowed to apply chemicals through an irrigation system. To become certified, chemigators must complete a chemigation safety training course. The classes are overseen by the Nebraska Department of Environmental Quality and the Cooperative Extension Service.

After the initial permit is granted, chemigation permits may be renewed annually. Re-inspections are made on a random basis, with each chemigation site inspected at least once every three years.

In the summer of 2007, 105 inspections were made for new or renewal permits.

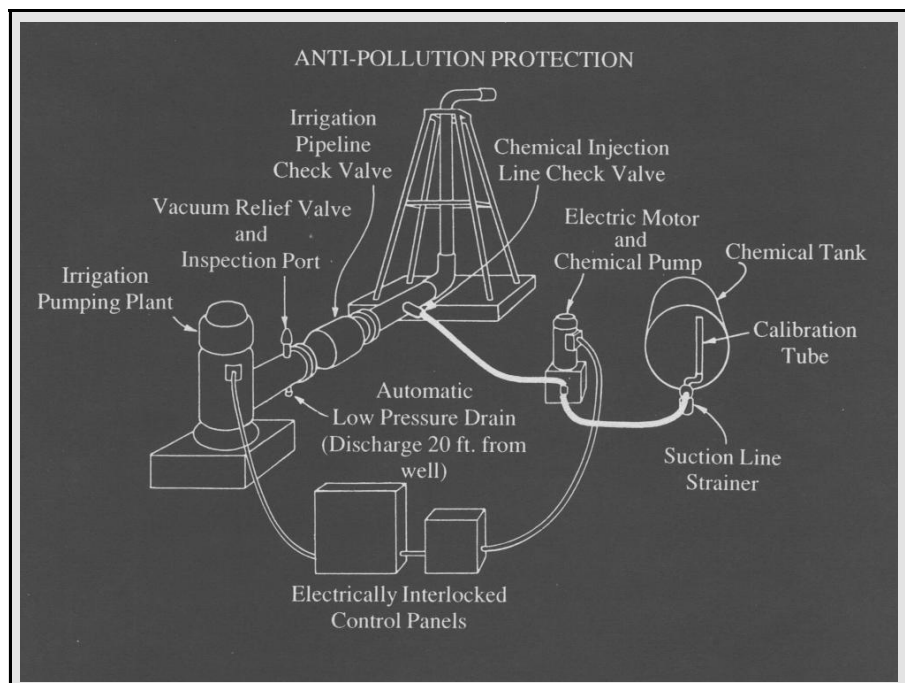
**Table CHEM-1. Summer 2007 CHEMIGATION SAFETY EQUIPMENT INSPECTIONS**

<b>Renewal Permits Issued</b>	<b>275</b>
<b>New Permits Issued</b>	<b>31</b>
<b>TOTAL NUMBER OF ACTIVE PERMITS</b>	<b>306</b>
<b>Permits Cancelled or Not Approved</b>	<b>52</b>

## Diagram of a Typical Chemigation System — Anti-Pollution Protection

A properly equipped chemigation system includes the equipment and anti-pollution and safety devices depicted in this diagram ...

*(Illustration: Cooperative Extension Service and the Nebraska Department of Environmental Quality).*





## Chemigation Permits

State law requires anyone who applies agricultural chemicals or fertilizer through an irrigation system to first obtain a chemigation permit from his or her local NRD. Each chemigation site must have its own permit. Before issuing a permit, the District must conduct an inspection of the site to determine that the proper safety equipment is in place and operating.

The required safety equipment includes:

- A mainline check valve with zero leakage.
- A low pressure drain that will discharge at least 20 feet from the well.
- A chemical line check valve with zero leakage and a minimum of ten pounds per square inch opening pressure.
- An interlock that prevents chemical injection when the irrigation well is not pumping water.
- A vacuum relief valve between the well and the mainline check valve.
- An inspection port with a four-inch minimum diameter.

Each application for a permit to chemigate must list a certified applicator. A certified applicator is the only person who may apply fertilizer or agricultural chemicals through an irrigation system. To become a certified chemigation applicator, a person must attend a training session and pass a test. The training and testing program is operated by the Cooperative Extension Service and the Nebraska Department of Environmental Quality. For information on becoming certified, contact your local extension office.

Application fees are \$30.00 for new permits and \$10.00 for renewals. Application forms are available at the NRD office in York.



***Marie Krausnick and Russ Gierhart, Upper Big Blue NRD Water Department staff, demonstrate a safety inspection on a mainline check valve.***