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DISCOVER 4-H
2007 Nebraska 4-H Month

FEBRUARY IS NEBRASKA 4-H MONTH

Learn about 4-H Clubs, Projects, Camps and more

— see pages 8, 9 & 12

Private Well Management During a Drought

Frequent droughts have caused severe water shortages in some areas. Droughts can be especially stressful for the rural homeowners who rely on private wells for their water supply. These individual wells tap groundwater aquifers which cannot easily be seen or monitored. The invisible nature of groundwater leads to an uneasy feeling among homeowners relying on wells that their water supply could dry up without warning during a drought.

Changes have occurred to the landscape in many rural areas. Increasing development and rural population growth will likely continue in the future. Existing rural residents often worry these changes may create competition for groundwater that might increase the susceptibility of their well to drought. It is unlikely small numbers of new homes will cause significant changes in groundwater levels. However, more dramatic changes in land use that tap large amounts of groundwater or prevent recharge from occurring over a wide area could make existing wells more susceptible to drought.

Groundwater Level Annual Cycle

Given this natural cycle of groundwater, most problems with wells tend to occur in late summer or early fall when groundwater levels naturally reach their lowest levels. The natural fluctuation of groundwater levels tends to be most pronounced in shallow wells. As a result, shallow wells are usually more susceptible to drought than deeper wells. Although deeper wells may be slower to suffer from drought conditions, they may also take longer to recover after a drought has occurred.

The water level in a groundwater well will fluctuate naturally during the year. Groundwater levels tend to be highest during March and April in response to winter snowmelt and spring rainfall. The movement of rain and snowmelt into groundwater is known as "recharge." Groundwater levels usually begin to fall in May and continue to decline during the summer.

Groundwater recharge is limited during late spring and summer because trees and other plants use the available water to grow. Natural groundwater levels usually reach their lowest point in late September or October. Groundwater levels during winter may be stable or fall slightly until spring snowmelt and rainstorms start the annual cycle again.

Determining Your Groundwater Level

Direct determination of the groundwater level in your well is difficult and usually requires the use of a water level meter. These meters are comprised of an electrical probe attached to the end of a measuring tape. The probe is lowered into the well until a display or light indicates it has reached water. The depth to water is then read directly from the measuring tape. These instruments generally cost \$300 or more depending on the anticipated length of tape needed.

There are other, less direct, but more practical methods to determine the status of your well water supply. Well drillers are continually drilling new wells and, therefore, may have knowledge of groundwater levels near your well. They may also have installed new submersible pumps

Some Wells in Lancaster County Have Dried Up

No one will tell you when to turn on or off your irrigation system when pumping water from your own well. No one will tell you how to use the water in your home. These decisions are up to you. What should be guiding your decisions and water usage is your desire to maintain your current water supply and not have to drill and pay for a new well. In many areas of Lancaster County, the new well may not have as high quality water as the existing one.

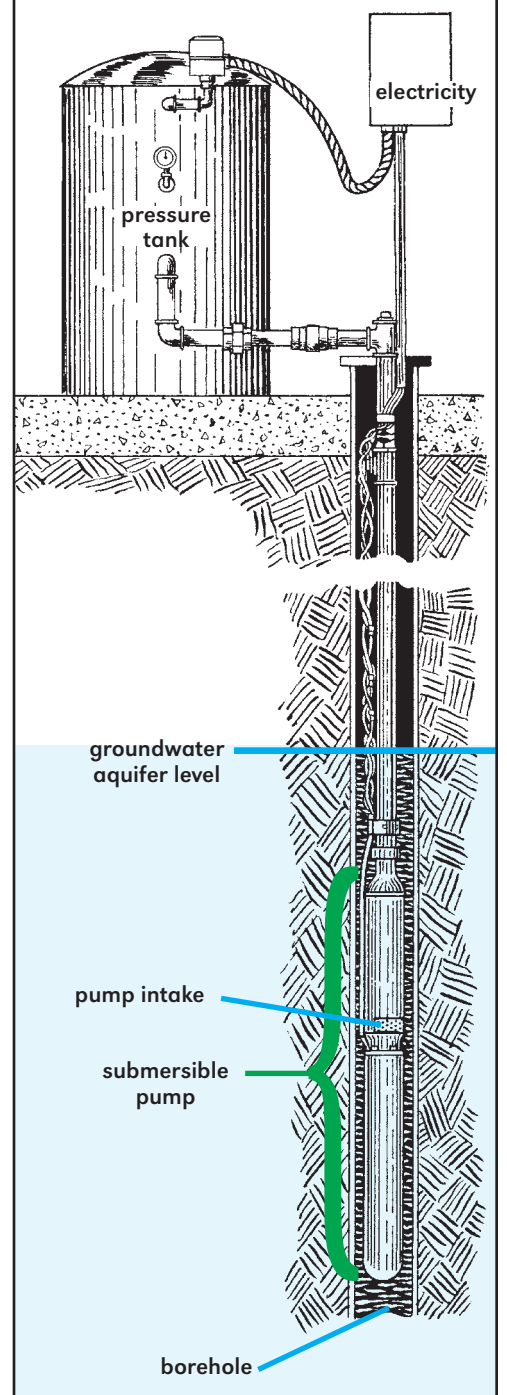
Many residents of rural Lancaster County have lost their water supply and had to drill new wells and others have noticed a lower water quality in their existing well. Now may be a good time to evaluate your water usage and initiate some water conservation practices. Even if the drought ended today it will take time to bring water levels back to preexisting levels.

in nearby wells that would allow them to document the existing groundwater level. Similar discussions with neighbors that have had new pumps installed or had new wells drilled may provide valuable information about the groundwater level.

Conserve Water!

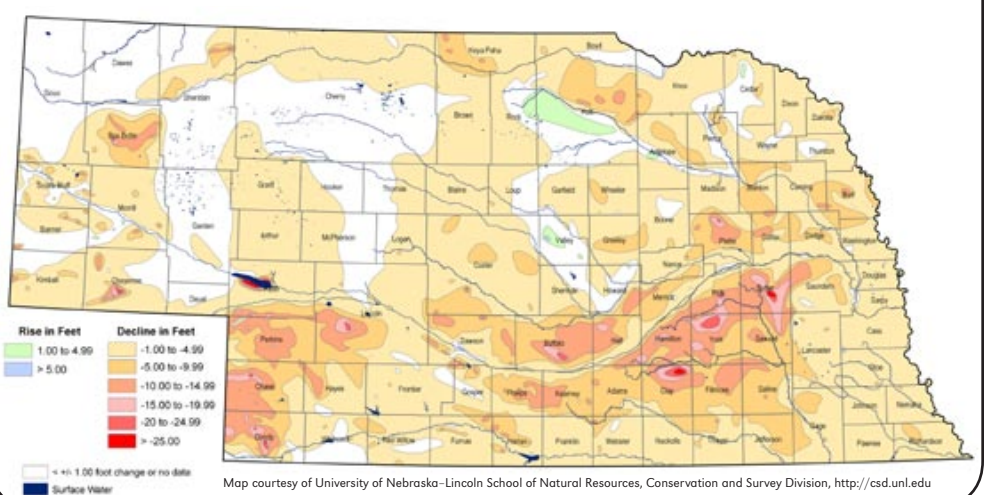
Water conservation measures become critical during times of drought. Homeowners relying on private wells should begin to conserve water as soon as drought conditions occur. Water use within the home can be significantly reduced through changes in habits and by installing water-saving devices. In emergency situations, changes in water use habits can provide quick reductions in water use. Examples might include flushing the toilet less often, see *Private Well Management* on page 3

If the groundwater level drops below a well's submersible pump intake, the well will pump air instead of water.



Groundwater-level Changes in Nebraska – Drought from Spring 2000 to Spring 2006

Spurred by increasing irrigation use and a statewide drought going into its eighth year, parts of Nebraska are experiencing groundwater declines of up to 30 feet, according to annual monitoring by the University of Nebraska-Lincoln. Researchers with the UNL School of Natural Resources Conservation and Survey Division, along with personnel from cooperating agencies, measure spring water levels in more than 5,600 irrigation, domestic, observation and monitoring wells in all of Nebraska's 23 Natural Resources Districts. Because of strong interest in the effects of the current drought on groundwater levels, a map from Spring 2000 to Spring 2006 was produced.



Map courtesy of University of Nebraska-Lincoln School of Natural Resources, Conservation and Survey Division, <http://csd.unl.edu>

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