

Capping of Water Wells for Future Use

Bruce Lesikar and Justin Mechell*

Water is one of our state's most precious resources. Much of our groundwater comes from aquifers, which are underground layers of porous rock or sand containing water. Wells can be drilled into the aquifers to produce drinking water, irrigation water, and water for industry. Because groundwater supplies more than half of the water used in the state, all Texans must help protect the quality of this vital resource.

Groundwater has been pumped from water wells for many years. Over time, many wells around homes, farms, industrial sites and urban areas may no longer be needed. Wells that are no longer being used but might be needed in the future can be sealed with a cap that covers the top of the well casing pipe to prevent unauthorized access and contamination of the well. A cap is a temporary groundwater protection solution that allows a well to be used at a later time.

Can my well be capped?

A well can be capped only if it is in good condition and is in use. The Texas Depart-

ment of Licensing and Regulation (TDLR) defines this as a "non-deteriorated well." A non-deteriorated well is one with a casing and pump in good condition. If your well is not in good condition it should be properly abandoned according to instructions in the Landowners Guide to Plugging Abandoned Water Wells (http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-347.html).

You can inspect the condition of a well casing at the surface by searching for holes or cracks. Use a light to check the inside of the casing. If you can move the casing around by pushing against it, the casing is probably deteriorating. If you need assis-



Figure 1. The slab around this capped well must be repaired to keep water from entering the well bore hole.

*Professor and Extension Program Leader for Biological and Agricultural Engineering; and Extension Assistant; The Texas A&M University System.

tance in determining the condition of your well, contact:

- ◆ your local groundwater conservation district
http://www.tceq.state.tx.us/permitting/water_supply/groundwater/districts.html
- ◆ a licensed water well driller in your area
- ◆ the Water Well Drillers Program with the TDLR
<http://www.license.state.tx.us/wwd/wwd.htm>



Figure 2. The annular space around this capped well must be properly sealed and a slab constructed around the casing.

What are the steps in capping a well?

The landowner, a licensed well driller or a licensed pump installer may cap a well. There are several steps involved.

The well casing should extend above the ground surface to limit the risk of water entering the well. If the casing is at or below ground level it should be extended above the ground, making sure there is a watertight connection between the casing and the cap.

The cap should seal to the existing well casing. A PVC well casing can be sealed by gluing a PVC cap to the top of the casing. Some metal casings are sealed by welding a

plate metal cap to the top of the casing. Another option is to insert a capped casing into the well casing, with the top of the inside pipe resting on the top of the outer well casing.

There are three criteria for capping a well:

- ◆ A cap must fit tightly and be properly sealed to prevent surface pollutants from entering the well.
- ◆ The well cap should support 400 pounds to minimize the risk of a person falling into the well.
- ◆ To protect children and animals, the cap should not be easily removed by hand and it should be heavy enough that it is not easy to lift. If the cap is properly glued or welded there should be no danger of its accidentally being removed.

The annular space (the open ring between the casing and the soil) also must be sealed. Figure 3 shows the proper annular sealing of a well and the preparation of the ground surface. The soil should slope away from the capped well in all directions to prevent surface water from reaching the casing and possibly passing into the well. Water flowing across the ground surface should be directed around and away from the well.

Proper Surface and Annular Sealing Example Chapter 76.1000 (1)

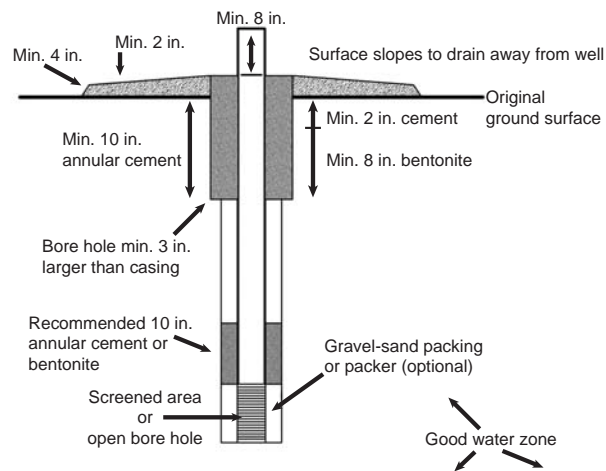


Figure 3. An example of the proper surface and annular sealing of a well.

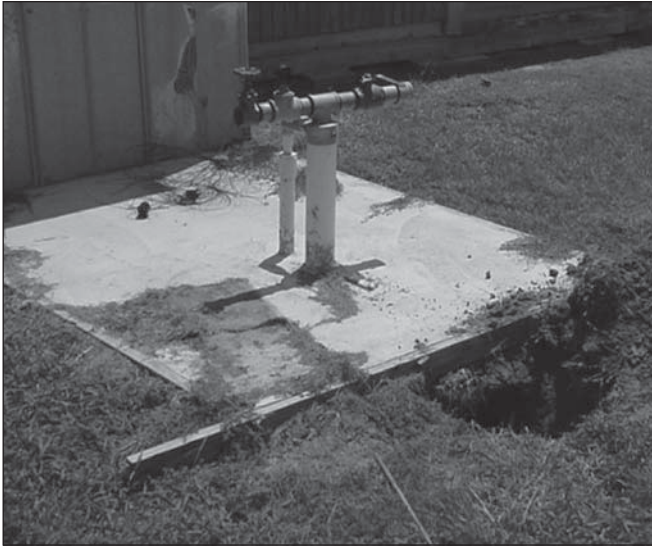


Figure 4. This well has a proper slab construction, with the casing extending well above the slab.

Do I need to report a capped well?

There are no state requirements for reporting a capped well. However, if you want to determine whether your well is legally capped, contact your local groundwater conservation district, a licensed water well driller, or the Water Well Drillers Program of the TDLR.

How do I protect a wellhead?

To prevent groundwater contamination, you should protect the wellhead of a capped well just as you would that of a functioning well. Here are some good steps to take.

- ◆ Do not apply pesticides or fertilizers within 100 feet of the wellhead.
- ◆ Do not store chemicals or animal wastes within 100 feet of the wellhead.
- ◆ Maintain the soil surface so that it slopes away from the wellhead.
- ◆ Install a concrete pad according to the TDLR specifications.
- ◆ Rather than using a herbicide, mow around the wellhead occasionally to control weeds.

- ◆ Periodically check the cap for cracks or evidence of tampering.



Figure 5. This well has a PVC cap and metal sleeve pipe protection.

For more information

Some areas of Texas have programs to help landowners take care of wells. Contact your local groundwater conservation district and soil and water conservation district (<http://www.tsswcb.state.tx.us/>) to see if such a program is available in your area.

Additional information can be obtained from:

- ◆ Texas Commission on Environmental Quality
<http://www.tceq.state.tx.us/>
- ◆ Texas Department of Licensing and Regulation
<http://www.license.state.tx.us/>
- ◆ Texas Cooperative Extension
<http://texaswater.tamu.edu>

Acknowledgments

Guidance and assistance was provided by the Texas Groundwater Protection Committee and the Texas Commission on Environmental Quality. The effort was partially funded by the U. S. Environmental Protection Agency.

Photos courtesy of the Texas Department of Licensing and Regulation.

Produced by Agricultural Communications, The Texas A&M University System

Extension publications can be found on the Web at: <http://tcebookstore.org>

Visit Texas Cooperative Extension at: <http://texasextension.tamu.edu>

Educational programs of Texas Cooperative Extension are open to all people without regard to race, color, sex, disability, religion, age or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas Cooperative Extension, The Texas A&M University System.

5M, New