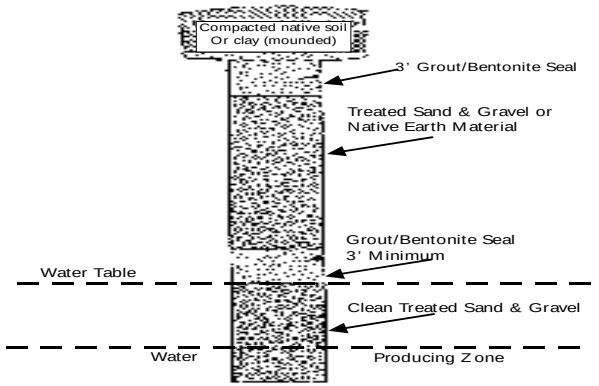
Closure of Unused Wells

Wells that are unused and have been improperly decommissioned (abandoned) pose a serious risk to Alabama's groundwater quality. Improperly decommissioned wells provide a direct conduit for contaminated surface waters to enter groundwater. This can contaminate not just an individual water supply, but the water supplies of some or all of the well owners in the area. The threat of contamination is heightened since the surface water can move directly into groundwater, bypassing the filtering action of the soil. Extremely high levels of biological and chemical contamination can be reached very quickly.

Well owners are sometimes tempted to use abandoned wells to dispose of sewage and other wastes. This is *NEVER* acceptable; it is literally like pouring waste directly into your drinking water, and the health risks cannot be overstated.



Dug Well

Preventing groundwater contamination is the main issue associated with well abandonment, but there are secondary concerns as well. An improperly filled or capped well can be a physical hazard; recall the infamous baby Jessica incident from the late 1980,s. An improperly abandoned well can also have negative effects on a small aquifer's yield, hydrostatic pressure and other factors that will affect future well performance.

Proper Well Decommissioning Procedures

Having a licensed well driller decommission a well while he is on the property to drill a new well is often the quickest, easiest and safest way of abandoning a well. While it is *recommended* that a well driller do the job, it is not *required* under current guidelines.

If you decide to do the work yourself, you will probably need to seek the advice of an outside authority at some point. The state agencies listed in the back of this brochure will be able to help you; natural resource districts, certified well drillers and local officials may be of assistance. The following are a broad set of guidelines for decommissioning wells; the exact procedures will differ depending on the type of well and local geologic conditions.

Individual water supply wells are relatively shallow in depth and serve one to several households with enough water for domestic purposes. These wells are typically one of three types: shallow dug wells, driven or sand point wells or drilled or augured wells. As with other types of wells, the type and depth of well should be determined prior to plugging. Any obstructions in the well should be removed prior to plugging. Under no circumstances should any part of the casing be allowed to remain above the surface of the ground after plugging.

Shallow Dug Wells are hand dug wells that extend down to the aquifer and are sometimes blasted or chipped into bedrock to reach the aquifer. Stone or concrete walls called curbing is sometimes necessary to keep the well from collapsing. These wells are rarely deeper than a few tens of feet and have diameters that are usually several feet across.

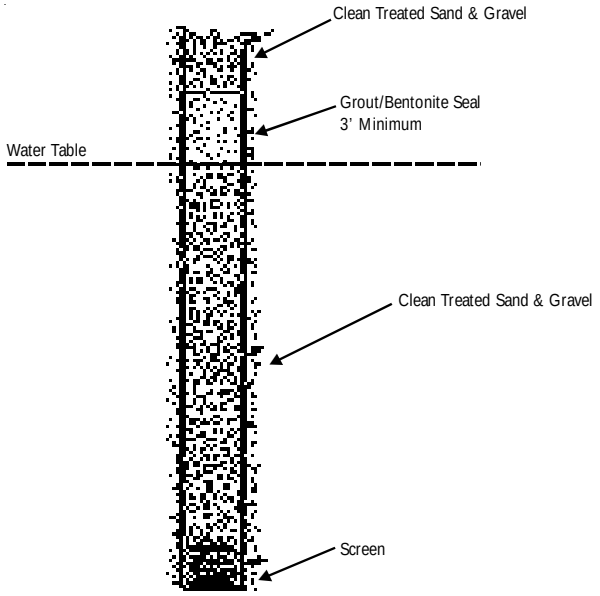
Pumps, piping or debris should be removed and the top 3 to 5 feet of curbing should broken up prior to filling. Any portion of the well that extends into bedrock should be filled with a concrete-bentonite grout. The remainder of the well should be filled with clean native materials that approximate the permeability of the aquifer and overlying soils near the well. The soil should be compacted to prevent settling and ponding of water in the location of the former well.

Driven or Sand Point Wells is a well that is driven to the desired depth, either by hand or machine and may employ a wellpoint, or alternative equipment. These wells typically have a small diameter (2 inches or less) with a short screen near the pointed end and can only be used in soft sandy sediments or soils.

Driven or sand point wells should be removed if their diameter is 2 inches or less and their depth is 25 feet or less. The hole should be filled with a bentonite-cement grout. If greater than 25 in depth, larger than 2 inches in diameter, or cannot be removed, the well should be filled with a bentonite-cement grout from bottom to top using the pump-down method using a tremie pipe.

Drilled Wells—Diameters of 2 to 20 inches are typical for these wells which are installed with the use of a drilling rig and may be several tens to several thousand feet deep. In Alabama, drilled domestic wells are generally less than 250 feet deep.

Drilled domestic wells are often unique in design and depth and should be abandoned only by a licensed well driller. If possible, the casing should be removed and the borehole filled with a cement-bentonite slurry. If the casing cannot be removed, the entire well should be filled with a cement-bentonite slurry using the pump-down method with a tremie pipe. In areas subject to subsidence and/or farming, the top of the casing shall be cut off a minimum of three (3) feet below the surface of the ground before plugging operations begins. After filling the well with the cement-bentonite slurry, the excavation above the top of the cement plug shall be filled with compacted soil to minimize future hazards to farming equipment etc. In other areas, the top of the casing shall be cut off at or below the ground surface.



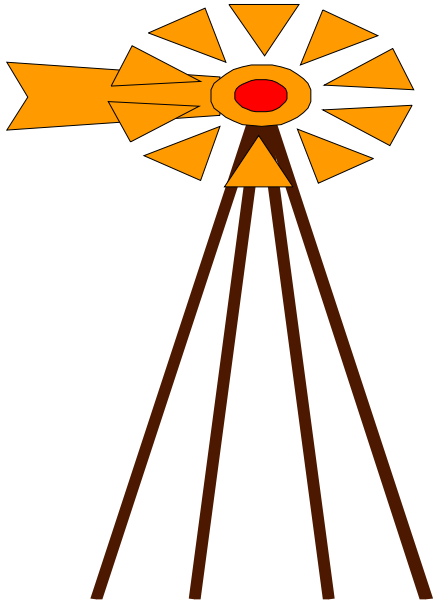
Drilled Well

For more information on well abandonment and other water quality issues, please contact:

Alabama Department
of Environmental Management
Groundwater Branch
1751 Cong. W. L. Dickinson Blvd
Montgomery, AL 36109-2608
(334) 271-7862

GROUNDWATER GUARDIAN

Protecting Our Groundwater



Guidelines for Well Abandonment

Alabama Department of Environmental Management
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