

Why is proper well abandonment important?

Out of service or improperly abandoned wells pose a number of threats to Virginia's Coastal Plain aquifer system. These wells may allow the movement of water into and between aquifers that would not naturally occur whereby mixing waters of different water quality and hydraulic head. This situation could create a potential "drain point" in an aquifer.

The compromised and/or deteriorated well also acts as a "conduit" to move contaminated groundwater from the shallow unconfined water table aquifer to the deeper confined artesian aquifers or nearby surface water bodies. Sources of contamination include underground storage tanks, failed septic tank and/or drainfields, road salt, landfills, subsurface liquid transportation lines, and vandalism.

In addition, uncapped wells do pose a hazard to young children and wildlife who could become trapped in the wells. These are serious threats to our water supply especially when multiplied by the numerous wells left improperly abandoned throughout the region. It is the responsibility of a well owner to properly abandon and document the abandonment of any out of use well.

What Regulations apply? Proper permanent well abandonment is specified in the Virginia Department of Health (VDH) Waterworks Regulations 12VAC5-590-840 B which covers public wells, Class I and Class II wells, etc., and in the Private Well Regulations 12VAC5-630-450. which governs Class III wells, including residential wells, observation, monitoring, and remediation wells. In addition, the 1992 Ground Water Withdrawal Regulations 9VAC25-610 requires the protection of aquifer quality and aquifer ground water levels.



What is Proper Permanent Well Abandonment?

Permanent Well abandonment is **not** simply capping the well as shown in the photo to the left. Capping the well is only considered to be temporary abandonment. Permanent abandonment involves completely filling the well with grout as described in the steps below.

Basic Steps for the Permanent Abandonment of Ground Water Wells.

Note: Gathering information on the well construction including the completed depth should be done early in the planning process since the depth and size of the well govern the amount of materials and equipment needed for the abandonment.

All casing and screen materials may be salvaged.

Step 1: The well must be checked from land surface to the entire depth of the well before it is plugged to make sure the well is free of obstructions that may interfere with grouting operations.

Step 2: The well must be thoroughly chlorinated prior to grouting per VDH requirements.

Step 3: Grouting the well: Bored wells (usually 24 to 36 inch diameter wells) shall be completely filled with cement grout or dry clay compacted in place.

Wells constructed in unconsolidated formations (aka drilled wells) shall be completely filled with cement grout or bentonite slurry by introduction through a pipe initially extending to the bottom of the well. Such pipe, referred to as a tremmie pipe) must be inserted to the bottom of the well and raised slowly to ensure the pipe remains submerged in grout, as the well is filled with the grout.

Wells constructed in consolidated rock formations or which penetrate zones of consolidated rock may be filled with sand or gravel opposite the zones of consolidated rock. The top of the sand or gravel fill must be at least five feet below the top of the consolidated rock. The remainder of the well shall be filled with sand-cement grout only.

Step 4: Remember to document the abandonment procedures including the method used, the materials used and the GPS location and reference datum.

DEQ Factsheet: Proper Permanent Well Abandonment for Virginia Coastal Plain Wells

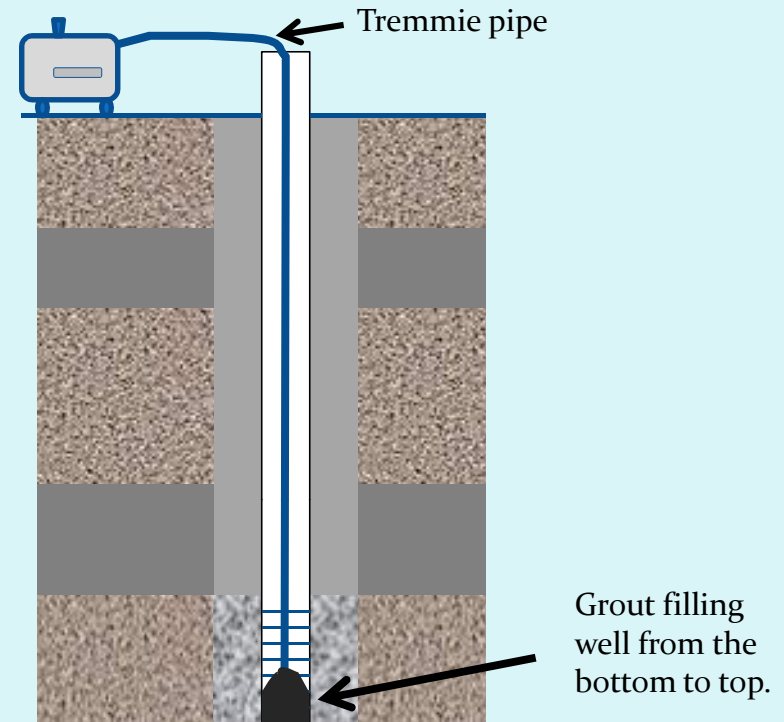
What actions are required if unanticipated problems

are encountered. Unfortunately, not all well abandonments occur without a hitch. Obstructions, stuck pumps, etc. can be encountered and must be resolved to allow the well to be filled with grout from bottom to top. Check with your VDH contact and/or the DEQ prior to making a decision to cease efforts to remove the obstruction.

Who can perform proper abandonment? Virginia Department of Professional Occupation Regulations require groundwater wells be installed, repaired, and abandoned by licensed Water Well System Providers.

What Forms are required and who needs to be contacted when planning a well abandonment? Contact the VDH Field Office for public supply wells and your local VDH office for private wells. The **VDH** oversees the well abandonment process and may need to be present for the grouting process. The abandonment procedure must be documented on a GW2 form and submitted to the VDH and DEQ.

The DEQ Groundwater Characterization Program works to expand the state wide well monitoring network and could be interested in including your well in the network. Prior to abandoning your well, contact the DEQ to discuss the possibility of **incorporating the well to the DEQ monitoring well network.**



DEQ Contacts for specific situations or questions :

Groundwater	Groundwater
Characterization Program	Withdrawal Permitting
Scott Bruce: (804) 698-4041	Craig Nicol: (804) 698-4214