

## **Answers to Your Questions About Flowing Wells for Homeowners and Pump Installers**

Flowing wells can present unique challenges for well drillers, pump installers and homeowners. The key to maintaining a safe flowing well is good well construction practices and installing a pump and pressure system that controls and manages the flow and prevents the waste of water. Homeowners should be aware of flowing well considerations in order to get the professional help they need. This document reviews the existing code requirements for flowing wells and provides additional technical advice.



### **What's the difference between an artesian well and a flowing well?**

All flowing wells are artesian, but not all artesian wells flow. For a well to be artesian, the water in the well must rise to a level above the top of the aquifer. When the artesian water level rises above the ground surface it becomes a flowing well.

### **Why does my well flow?**

Artesian conditions are most likely to be encountered in valleys, near water bodies or springs and in areas with clay or shale layers that act as confining units.

Examples of flowing conditions are shown in the following figures:

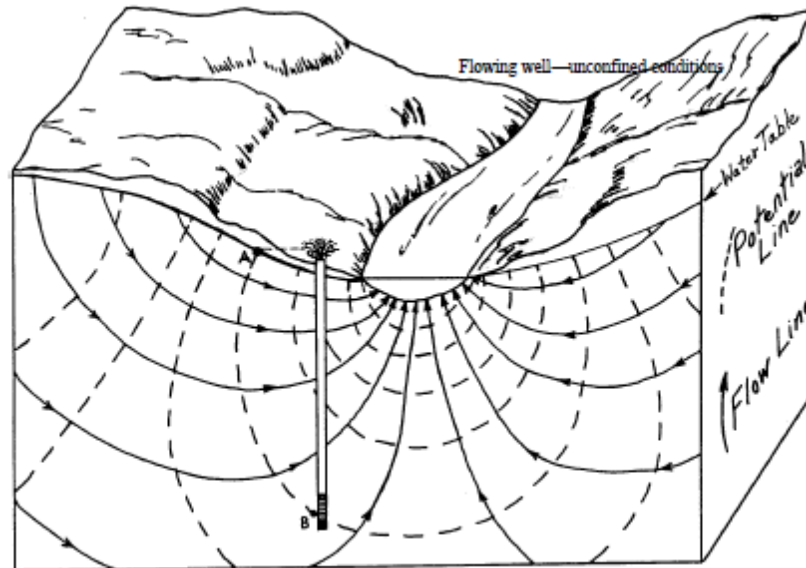


Figure 3. A flowing well in an unconfined aquifer.

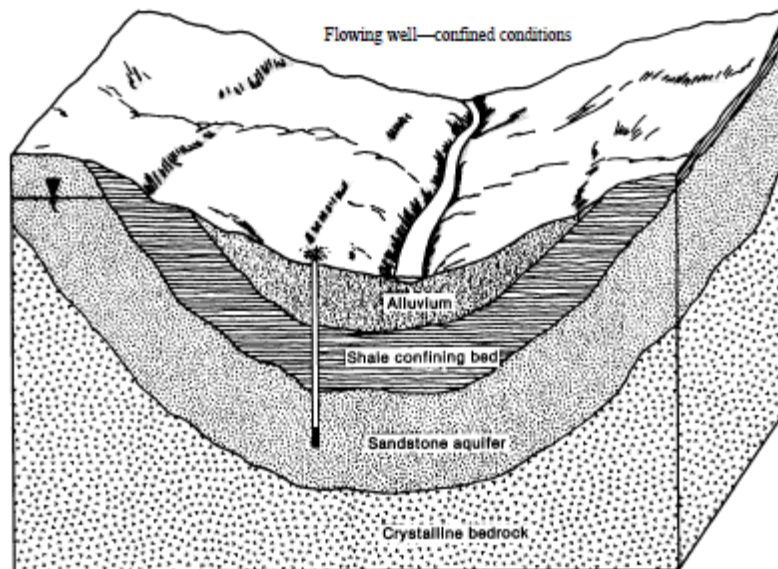


Figure 4. A flowing well in a confined aquifer.

### Where does the water in a flowing well come from?

Water flowing into a well in an unconfined aquifer hasn't had to travel very far and may be susceptible to contaminants on the ground surface on higher ground above the well. Water flowing into a well from a confined aquifer may have travelled many miles from where the water first infiltrated into the ground and may be susceptible to contaminants introduced in the source area.

### How is a water line connected to a flowing well?

Pump installations for flowing wells must meet the requirements of NR 812.32(9) [<Hyperlink>](#). Underground pipe connections may only be made to a flowing well with an approved pitless adaptor.



**Do I need an overflow pipe?**

When necessary to prevent damage from overflowing water or to prevent freezing of the top of a well, overflow piping may be installed. If it is possible to seal off the top of a flowing well without damaging the well or causing water to flow up the outside of the casing or other issues, an overflow pipe is not required.

**What are the requirements for overflow piping?**

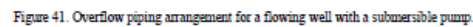
When installed, the flow of water from the discharge pipe shall be limited to a minimum so as to preserve groundwater and water pressure. The overflow pipe shall be installed to extend through the well cap or seal or shall extend off of a surge tank in the basement. The overflow pipe may be attached to the outside wall of the well casing pipe if both the point of exit from the well casing pipe and the terminus of the overflow are at least 12 inches above the ground grade and the connection to the well casing pipe is watertight. The overflow pipe shall terminate at least 2 pipe diameters above any drain inlet. If a pump is installed in the well and the well stops flowing during pumping, a screen shall be installed on the overflow pipe.

*The use of French drains or below-grade overflow arrangements are not allowed.*

**What kinds of pump installations are allowed for a flowing well?**

Off-set shallow well pumps may not be connected directly to the buried line from a well. Buried piping from the flowing well may only discharge to a surge tank having an overflow pipe or an air-vacuum relief valve at the top of the tank. A booster pump shall be connected to the surge tank and discharge into a pressure tank.

Examples of acceptable installations are shown in the following figures:



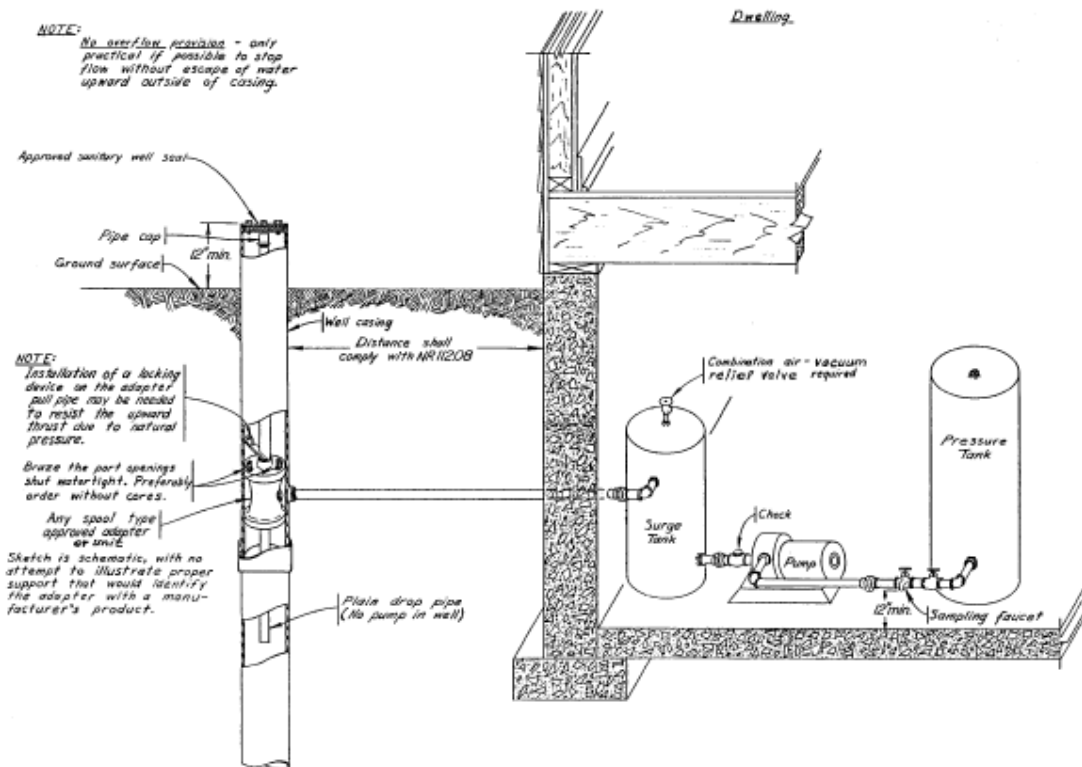


Figure 42. Flowing well installation with a surge tank instead of an overflow piping arrangement.

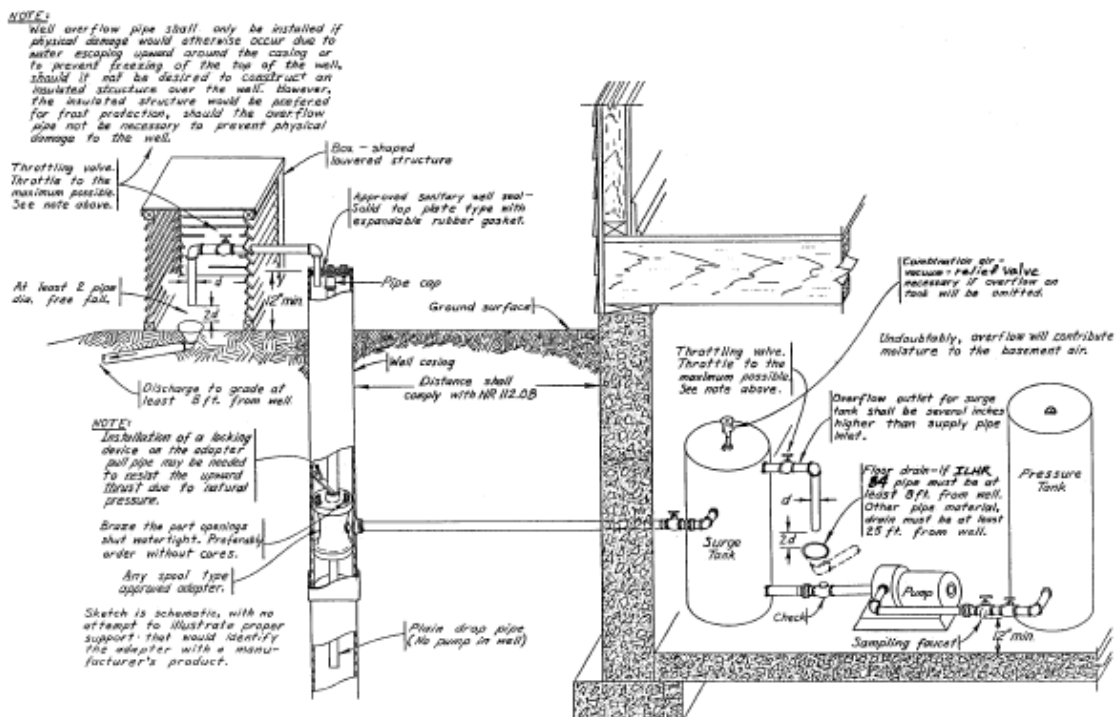


Figure 43. Overflow piping arrangement for a flowing well with a surge tank and with no pump.



### How do I disinfect a flowing well?

Flowing wells are generally less susceptible to bacterial contamination. Getting the proper contact time during the chlorination of a flowing well is difficult. It is usually necessary to stop the flow by extending the top of the well casing until the flow is stopped or to valve off the flow. A chlorine solution can be pumped into the well using a hose connected through the top of the sealed well cap or over the top of the casing extension.

### How do you fill and seal a flowing well?

Reducing or stopping flow is needed to properly fill and seal a well. Methods that may be used to reduce or stop flow include; extending the casing, pouring clean washed pea gravel into the bottom of the well, or using an inflatable packer.

Illustrations of these methods are shown below:

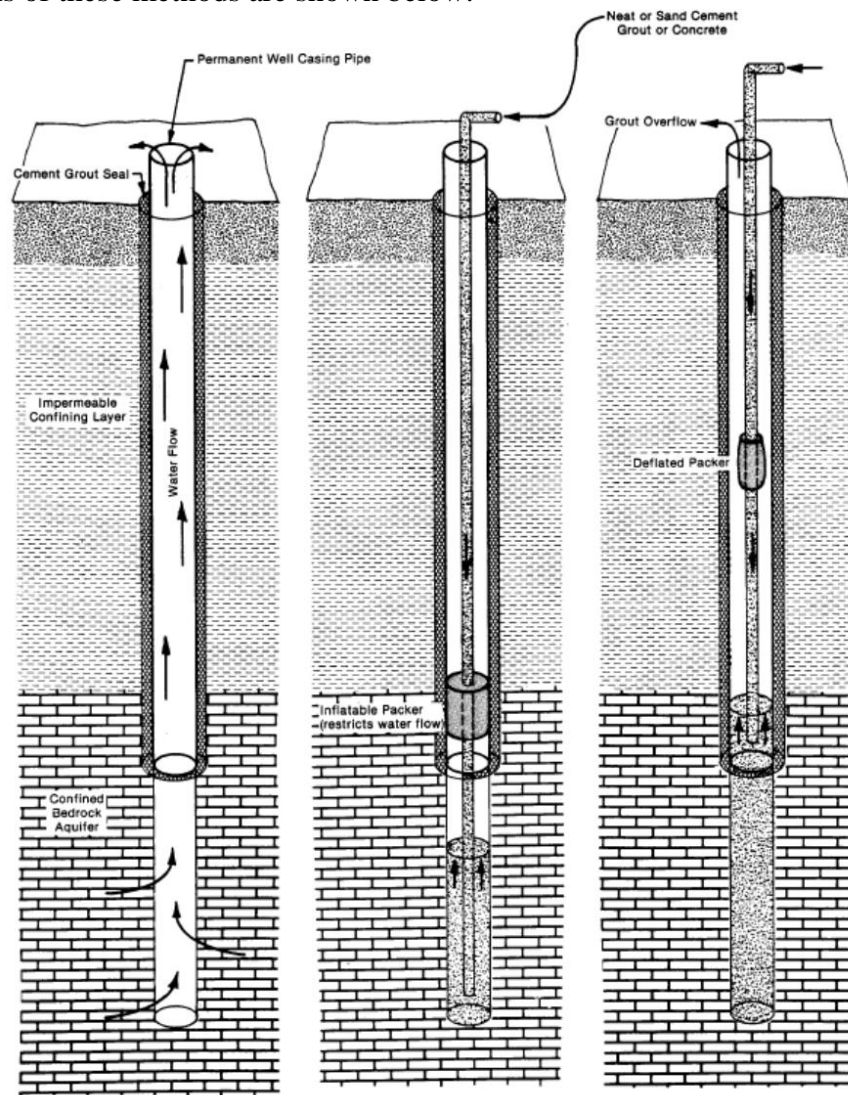


Figure 20. Inflatable packer method for permanently abandoning a flowing well.

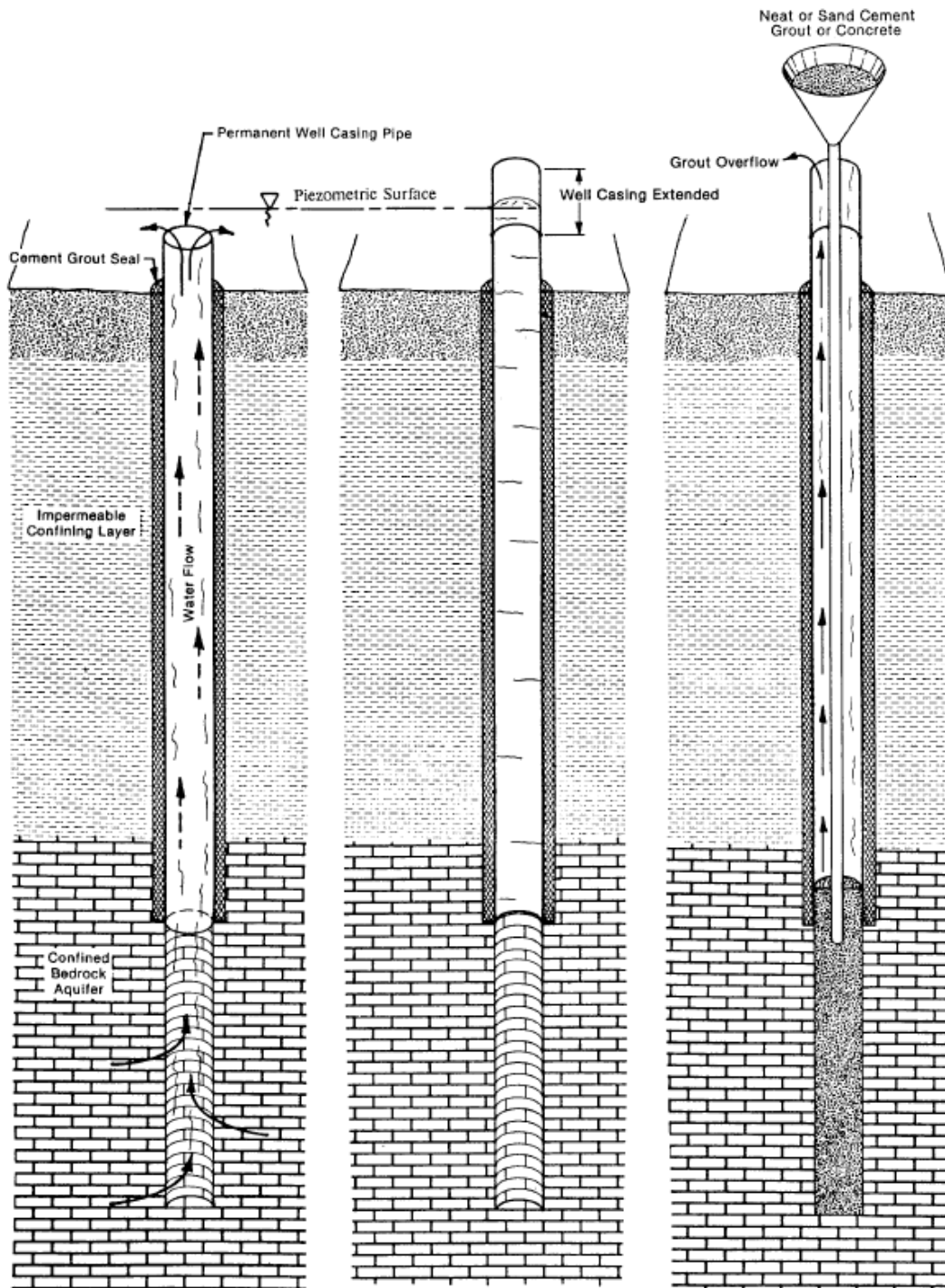


Figure 21. Method for reducing flow in a flowing well by extending the well casing pipe before permanently abandoning the well.

### Where can I learn more about flowing wells?

The Michigan Department of Environmental Quality has a 'Flowing Well Handbook, March 2005' that can be found by searching the internet using the keywords, 'Michigan flowing well handbook'.