

WELLS

Modern wells allow access to groundwater, supplying water to an estimated 23 million households nationwide. When installed and maintained properly, wells can provide safe, affordable water for many years.

Three Basic Types of Wells

Bored or “Shallow” Wells are usually bored into an unconfined water source, generally found at depths of about 100 feet or less.

Consolidated or “Rock” Wells are drilled into a formation consisting entirely of a natural rock formation that contains no soil and does not collapse. Their average depth is about 250 feet.

Unconsolidated or “Sand” Wells are drilled into a formation consisting of soil, sand, gravel or clay material that collapses upon itself.

Well Construction

All private well construction is based on establishing the right location for the well, sizing the system correctly and choosing the proper construction techniques. Only a licensed well contractor should install a well! They know the hydrology in your area and all the local codes and regulations for wells. They also have the modern equipment and expertise needed to make sure that your well is properly constructed to meet the water needs of your family.

Your well is located on your property according to certain regulations required by the state, county, or other locality. These regulations are designed to protect the integrity of your water supply. In addition, the well contractor uses his experience and expertise to locate the well on your property that is suited to your lot size, the location of existing structures and utilities, and the most likely location for a good supply of water.

Accurate sizing is critical to the construction and performance of your well system. Your system is designed to suit the needs of your household. Factors considered when sizing your system include number of bathrooms/fixtures, occupants, and anticipated water use.

Proper well construction is the key to operating and maintaining your well. The initial cost of a properly constructed well may be somewhat higher. However, in the long run, a properly constructed well results in improved efficiency, less maintenance, and longer well life.

Your Well

Your well is constructed of quality materials, designed to prolong its life and performance. The following is a list of the most important materials used in construction of your well:

Casing is used to maintain an open access in the earth while not allowing any entrance or leakage into the well from the surrounding formations. The most popular materials used for casing are black steel, galvanized steel, PVC pipe, or concrete pipe.

Grout is a sealant that is used to fill in the spaces around the outside of the well. It protects the well against the intrusion of contaminants. A grout mixture can be made of neat cement, bentonite or concrete, each used separately.

Screen is used when wells are drilled in unconsolidated materials to help keep sand and gravel out while allowing groundwater to enter. Available in many materials, with the most popular being stainless steel and PVC.

Gravel Pack is placed around the outside of the screen to prevent sand from entering the well or clogging the screen and to stabilize the well assembly.

The modern drilling process makes use of sophisticated technology. Two drilling methods are commonly used for private wells:

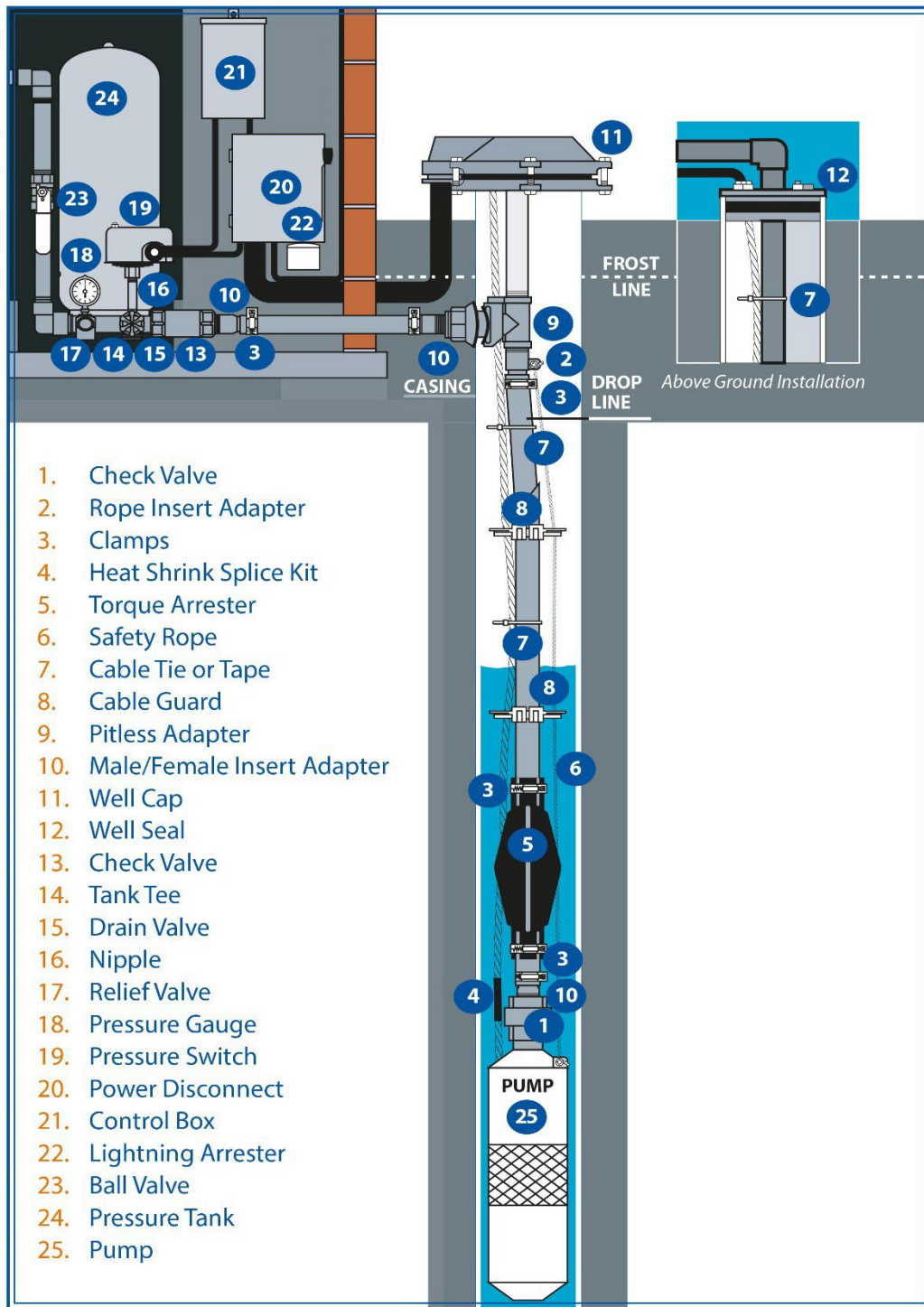
Air rotary drilling: A drill rig or truck outfitted with a large drill is driven onto the well site. The drill is lowered to the ground and turned on. As the drill spins, a hammer at its end smashes rock and soil creating the well shaft. The hammer is powered by air that is shot through the drill at very high speed.

At the same time, water is pumped around the drill to make the drilling easier. As the drill moves down, the same air that moves the hammer clears out the broken rock, dirt and excess water. When the drill hits a solid rock formation, a casing is placed in the well shaft to keep unwanted materials from entering the opening. Drilling then continues into the rock until water is found. The space between the casing and the ground is then filled with grout and the well is cleaned and capped.

Mud rotary drilling: Mud rotary drilling is used to drill where the soil is loose and sandy. It is similar to rotary drilling except that as the drill bit spins, a fluid (drilling mud) shoots down through the middle of the drill, then flows out at very high speeds at the sides and the tip of the drill. Without this fluid moving up and around the drill, the walls of the hole would cave in and the well could not be made.

The fluid and sand that come out of the hole are pumped to a pit. The fluid in the pit is pumped out and used again, while the extra sand stays put. After the drill hits an area of sand that is filled with water, the casing and screen are put in to keep sediment from getting in the well. When drilling is finished, the driller grouts and cleans the well, then seals it with a sanitary cap.

Sample Water Well System



This illustration is intended to represent some of the components that can be included in a water well system and is not intended as an installation guide.

Check local codes for actual requirements and restrictions.

Well Pumps and Tanks

Your private water system has two important components in addition to the well itself – a pump and a tank.

Pumps: There are many types and sizes of pumps for water systems. Some are only designed to remove water from a source. Others not only remove the water, but also force it through the rest of the water system. Some pumps are for special jobs such as boosting pressure or supplying a special outlet. Selecting the appropriate pump size and type is important for good well performance.

Tanks: Tanks provide storage for your water system. The two most common tanks for residential wells are diaphragm or bladder tanks and plain steel tanks. If your water supply provides plenty of water for your needs and you have selected the proper pump, it is easy to select the right size and type of tank. The amount of stored water in the tank is equal to the pump discharge in gallons per minute.

Additional storage: Some well owners may consider additional water storage tanks. Additional water storage is useful when there are power outages and other emergencies. Storage capacity of one day's water supply is sufficient. Be sure to have the installer provide manual access to this additional storage tank.

For More Information on

Contact the well contractor who installed your well or a licensed well contractor in your area. Many states maintain lists of licensed or registered well contractors. If you need help locating this list or finding a licensed well contractor in your area, contact the wellcare® Hotline at 888-395-1033 or use our interactive map on our [website](#).



Information to help maintain and protect your water well system:

wellcare® is a program of the [Water Systems Council \(WSC\)](#). WSC is the only national organization solely focused on protecting the health and water supply of an estimated 23 million households nationwide who depend on private wells (according to the U.S. EPA).

This publication is one of more than 100 wellcare® information sheets available FREE at www.watersystemscouncil.org.

Well owners and others with questions about wells and well water can contact the wellcare® Hotline at 1-888-395-1033 or visit www.wellcarehotline.org to fill out a contact form or chat with us live!

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By joining the FREE wellcare® Well Owners Network, you will receive regular information on how to maintain your well and protect your well water.

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