DIY Water Well For Your Homestead Or Urban Survival

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According to the U.S. Environmental Protection Agency, the average US family uses 400 gallons of water per day. Most of that goes to watering lawns and gardens. During a disaster, the grass can die, but the garden will need water.

Today I want to share with you a great method for driving your own water well that was developed by the U.S. Army. If you can drive a nail into a board, you have the skills to augment your water supply. Drilling companies charge thousands of dollars to tap ground water sources that you can often reach yourself with a few common tools and about two weekends of work.

Also, if you're worried about losing power to your well pump in a grid-down emergency, it is pretty simple and comparatively inexpensive to rig a solar panel to a water pump to transfer water into a holding tank and then feed that into your home plumbing. Best results are achieved if the holding tank is elevated, thereby providing a gravity feed to your pipes. Such a setup really is an emergency preparation we should all be working toward.

At the turn of the century the U.S. Army developed a fast, effective method to provide troops with water that did not involve a lot of expensive, cumbersome equipment. Soldiers simply drove a pipe into the ground with a sledgehammer until they reached the aquifer. Subsequently, it has proven to be ideal for supplying water to homesteads, second homes, and remote villages in developing nations.

If driving a pipe 75 feet or so into the earth sounds like a job for Superman, I've given you the wrong impression. Too hard of a blow can damage pipe threads. It's better to soften the ground as much as possible before you begin. I recommend digging a hole at the site you've selected and allowing water to settle in it for a week. The softer the ground, the easier the work. A shallow hole (5 to 10 feet) is best because deep ones too often need reinforcement to prevent them from collapsing.

You should also check with your neighbors. Neighbors, particularly old-timers, can often give you some idea of what lies beneath the subsoil. A weight on the end of a string dropped down a neighbor's well can give you a rough estimate of how far down you will have to go (measure to the point where the string becomes wet). If that doesn't work for you, pick a spot outside the drip line of a large hickory, walnut, butternut, white oak, or hornbeam tree that is not being irrigated.

Since these types of trees have tap roots (maples, among others, do not), the fact that they are doing well without irrigation indicates that their tap roots are anchored in an aquifer. I live in a community where the street trees are immense despite the fact that they receive negligible rainfall and quite often aren't being irrigated. Common sense told me that the water table could not be more than 80 feet below the surface.

As with everything there are laws and taxes telling you how you can dig on your own property. It's best to play the game and keep under the radar, so check with county health officials concerning regulations and permit requirements. ;) County officials do have access to well logs and other geological data and can be of great help to you. They can advise you as to subsurface composition (silt, sand, and decomposed granite are suitable for driven wells; hard clay or rock may prove difficult or impossible to penetrate), the approximate depth at which you can expect to find water, and the quality of the aquifer beneath your site. Choose a location as far as possible from septic tanks, sewer lines, chemical storage tanks, animal pens, and other potential contaminants.

To Get Started

You'll need a 2-inch drivepoint with screen (a hollow, conically shaped metal point adjoined to a fine mesh screen), several spools of teflon tape, 2-inch galvanized couplings to attatch pipe lengths together, 5-foot-long threaded lengths of 2-inch galvanized Schedule 40 pipe, 2-inch galvanized caps for the pipe, concrete mix, a weight, a foot valve, and 85 feet of 1/2 inch inside diameter, thick-walled, flexible, UV resistant, flexible polyethylene tubing.

Dig a 5 foot deep pit, fill it with water, and allow the water to percolate into the ground so as to softens the subsoil. Make sure the drivepoint is perpendicular to the ground—check it frequently with a level. If it is not straight, pull it out and start again. A slanted well wastes pipe and may be difficult to pump.

Use a heavy **wooden** mallet or maul to drive the capped galvanized pipe into the ground. When the cap becomes cracked or dented, discard it and screw on a new one. Establish a steady rhythm and the work will go easier. When the cap is about even with the bottom of the pit, unscrew it and screw on a coupling and a new length of pipe. Use teflon tape on the pipe threads, and make certain all connections are tightened securely with a pipe wrench. You may occasionally need to work from a step ladder in order to reach the cap with the maul. When going through clay or shale, you may find it easier to use a sledgehammer, but be careful not to overdo it.

If the drivepoint hits a large rock, pull the point out and start again in a new location. It won't drive through it and you could destroy your point if you try to break through. I know how horrible it can be to get 50ft down and have to start over, but such is the way of a driven well. You have to know when to quit. To pull out the drivepoint, place two hydraulic automobile jacks on opposite sides of the pipe. Attatch a pipe clamp to the pipe for the jacks to lift against. Once the drivepoint lifts a few inches, it should be easy to remove.
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When you believe you have reached water, tie a weight onto a length of string and lower it into the pipe (remember the tip above?). If it comes out wet, repeat the test several times over the next two days, and if the results are the same, you've found water. Drive the pipe down some more to compensate for seasonal fluctuations and periods of drought.

The last step is adding a sanitary seal to prevent surface runoff from contaminating the aquifer. Lengthen the pipe to a height approximately 3 feet above the surface of the ground and fill the pit with the original soil. To protect your water supply and anchor your well, pour a small concrete slab into forms made of used 2-by-4's or 2-by-6's centered around the pipe at the surface. Install insulation around the pipes to protect your well from damage if the temperature where you live drops below freezing in winter.
Pitcher pumps are ideal for shallow wells. At depths greater than 25 feet, however, they stop working due to the limitations of atmospheric pressure. Inertia pumps (one-way footvalves attatched to flexible irrigation tubing) are the simplest (they contain only one moving part) and least expensive (under $20) manual deep well pump. Instead of a hand powered pump, a solar powered unit could be installed and the solar cells could be placed on top of the pump house.

Studies from developing nations show that 90% hand powered water pumps break down within 3 years. This is mainly due to worn out or broken parts. In the case of hand powered pumps, what you pay for may very well be what you get. So if you plan on installing a hand powered water pump, do not buy the cheapest product on the market.