



www.nhwaterwell.com

Information: New Hampshire Water Well Association

Information in this document is provided in good faith to inform the public about groundwater and water wells. Well owners should ensure that their well contractor has obtained permits (if required) and has referred to local codes, rules, regulations and laws for site selection, construction, maintenance and operation of water wells and water system equipment.

HOW DEEP SHOULD MY WELL BE?

“How deep will the well be?” is a common question asked by a home owner or developer before having a well contractor drill a well. It is an important question, because for most well contractors the cost estimate for a well will in part be based on the depth drilled. The “cost per foot” of drilling will not only vary with the overall depth but also on the expected geological conditions and the diameter of the drill hole. If the well contractor has drilled several wells in the nearby area, he may be able to estimate the approximate depth where water will be encountered. Most of the time, however, the depth needed to find the required well yield cannot be determined accurately prior to drilling. A well is an engineered hole in the ground via which ground water can be brought to the surface. Drilling machines can drill to great depths. Deeper wells usually cost more than a shallow well to construct. However, not drilling deep enough can result in later problems that will be much more expensive to fix. Listed below are some of the factors that may influence decisions about the depth of a water well.

Seasonal rise and fall of the water table

During the year, the water table will fluctuate up and down in the well in response to seasonal precipitation in the area and local ground water use. The well must therefore be drilled deeper than the lowest expected elevation of the water table. Water level fluctuations may occur over several years if there have been drought conditions. Knowing the lower limit of the range of water levels over several years therefore can be helpful.

Surface contamination risks

Deeper wells that are properly constructed usually provide good protection from bacterial contamination sources originating at the surface. Increasing the well depth and the length of well casing will result in a longer flow path (in distance and time) of water from recharge at the surface to pumping from the well. The longer the length of time water is in the subsurface, the more opportunity there is for bacteria to die-off or be trapped by soil and rock.

Saline water

In some areas of the state’s seacoast and estuaries there may be a risk in drilling too deep and encountering saline groundwater. This can be a problem in areas where regional groundwater levels have been lowered because of suburban build-out where natural recharge is now restricted because of the impervious surfaces of roofs, roads, driveways and parking lots. Lowered groundwater levels have resulted in water from the ocean entering aquifers and moving inland, whereas in pre-development times “fresh” groundwater flow towards the ocean kept the salt water in aquifers at the coastline.

Low yielding rock formations

In low yielding rock formations the well may have to be drilled deep enough to serve as storage for groundwater. Once a well is drilled, the total depth, depth to the top of the groundwater table (static level) and the diameter of the well will determine how much water will be stored within the well cavity. The larger the well diameter the more water will be stored. For the typical 6 inch diameter well drilled for homes in New Hampshire there are 1.5 gallons of water stored for every vertical foot of the well below the water table.

Well depth and pump placement.

Pumps are not usually set directly at the bottom of a well. It is usually best to place the pump 10 to 20 feet up from the bottom of the well. In low-yield wells placing the pump below the depth at which the driller intersected the major fractures may create cascading water situations that lead to additional sediment or encrustation build up in the well. An automatic shut-off switch can be wired into the pump power line so that the pump will shut-off when the water level falls close to the pump.

(©AGWT 2013)

A licensed water well contractor – your best source for information