

Is my well going dry?

For homeowners that rely on a well as their sole source of water, the possibility of a dry well is akin to a nightmare. In most cases, wells don't "dry up" overnight. In the industry we refer to a well's capacity or production decreasing instead of saying it's just "dried up" because the decrease usually happens over a long period of time on the order of years or perhaps months, typically not days or weeks.

There are several methods to determine if the production of your well is decreasing, however, to ascribe decreased production to a specific cause (drought, over-pumping, plugged up well casing, neighbor drilling a well, confined aquifer, etc...) is not within the scope of this document and often includes complex modeling, research, testing & litigation.

The most simplistic method for evaluating water availability is to measure the depth to water from the surface when the pump is not pumping. This is called measuring the Static Water Level (SWL). A single SWL measurement is almost meaningless; the value in measuring static water level comes from a series of measurements during the same season(s) over a period of years. This ensures that you're not just measuring seasonal trends, but getting the bigger picture.

SWL is measured with a probe that your pump contractor should have. The probe is inserted in the well and lowered until it touches water, at which point it will beep or light up, etc... In some cases, measuring water level can be difficult when the pipe & wire (which connect to the submersible well pump in the bottom of the well) get in the way of the probe decent!

While measuring SWL can give a general idea of changing groundwater level and is relatively simple and inexpensive to perform, it overlooks several key factors:

- 1) Overall depth of the well. A deep well that taps multiple aquifers will have more water available than a shallow well that taps a single aquifer.*
- 2) Types of geology & underground formations that impact water availability. Wells that tap into water bearing gravel/sand formations will produce more water than wells that are mostly clay that tap into very minimal sand/gravel formations.*
- 3) Condition, type & age of the well. Many older wells were simply a piece of steel pipe driven directly into the ground. The steel corrodes, the sand/gravel around the well casing can plug with minerals, or the casing can collapse in certain sections- reducing the well's capacity.*

In order to fully understand a well's capacity a "well test" must be performed. A well test involves pumping the well for a period of time and measuring/controlling the water level and rate of flow of water coming from the well. When water is removed from the well at the same rate the water is entering the well the water level in the well stops dropping. This point of equilibrium is important because, by measuring the flow rate we now know the capacity that the well can sustain long term. As a general rule of thumb, it is important to perform a well test at a flow rate and length of time representative of typical use. Many homeowners opt for 2 hour well tests as they are the most economical option. Unfortunately, the results may be misleading as we find that it often takes more than 2 hours to even reach the equilibrium state in some wells.

Contact Oakville Pump to evaluate your well capacity & develop an effective water management plan!