



# Groundwater Myths

Groundwater Series: Skills & Knowledge | Fact Sheet 3 | Produced by Cotton Catchment Communities CRC and UNSW Water Research Laboratory

## 1. Underground lakes lay beneath our feet

**Myth: Ancient myths refer to magical underground lakes, while some ideas persist today of underground lakes or channels buried beneath our feet like pipework or veins.**

*Reality:* In reality groundwater in most areas is found in the tiny pore spaces between sand and gravel, or in rocks with narrow fractures. Underground lakes or caverns with ponds are geological features that are only found in landscapes made of limestone. Limestone can be identified by sharp patterns eroded by rainfall and bubbling when dissolved by acidic liquids. Limestone landscapes in NSW are limited to Jenolan Caves, Wellington and other palaeo reefs in the Lachlan Fold Belt rocks.

## 2. We can always count on groundwater

**Myth: There is a common belief that groundwater is freely available for all to tap, so many people have a casual attitude to how much groundwater they take. Every day new bores are drilled, and water is drawn without thought given to consequences, or without regard to the rules of civil society (AWA 2007).**

*Reality:* If groundwater systems are pumped too hard, by too many bores there may be no recovery of useable water. Much better management systems are needed to bring groundwater

systems into balance – allowing responsible and licensed users to rely on their bores permanently rather than not bothering about the future.

## 3. Our groundwater comes from the New Guinea Highlands

**Myth: There's a favourite drilling story about aquifers found beneath the western plains that are strangely similar to those found by drilling in the New Guinea Highlands, or Inner China. Some people are convinced that groundwater in Australia is somehow connected to distant sources overseas.**

*Reality:* Aquifers that support agricultural enterprises in the Murray-Darling Basin are part of regional groundwater flow systems that can extend thousands of kilometres, but have no connection with outside Australia. The fact is that the Murray-Darling Basin is like a bathtub that is partially filled with sand and mud, where the sides are sealed and cannot transmit water.

## 4. Divining rods are the answer

**Myth: "Dig here", says the fellow with the forked willow rod, "and you'll find water 60 feet down". A well is drilled and strikes water. In the US today there are 20,000 to 30,000 water witches who practice the art finding water more often than not (Chapelle 1997).**

*Reality:* There is as yet no scientific evidence supporting divining or witching to find water. The way in which the divining rod is typically held is like a spring which amplifies slight movement of the body. The claim that the rod dips involuntarily may well be telling the truth, but the fact is that if you pick any spot at random to drill, at least some groundwater will be found 90% of the time. An experienced local driller will often be able to pick suitable bore locations on the plains based on their knowledge rather than the rod. Drilling in rock however can be a hit or miss affair regardless of diving rods, and two holes drilled only a few metres apart yielding very differently.

## 5. The depth, yield and salinity of a bore can be guaranteed

**Myth: For a fee, company X gives a 100% guarantee that a 20 L/second supply of fresh water can be tapped at a depth of 45 feet if the rig drills at the marked site.**

*Reality:* The level of confidence that groundwater bore drilling will result in sufficient yields of fresh water depends on the extent of information that is available. At a specific site, there may be a low, moderate or high probability that a good fresh groundwater supply can be obtained. However, it is not possible to guarantee the depth, yield or salinity of a bore due to natural variability in the

## A Brief History of the Diving Rod or Water Witching

Ancients – the Scottish used the witch elm for divining rods, with immigrants to America becoming known as “water witches”.

1518 – Martin Luther declared the use of the witching rod a violation of the First Commandment “Thou shalt have no other Gods before me”

1556 – first written account of witching used by metal miners in Bohemia

1568 – St Teresa of Spain secured a plot of land for a monastery after a diviner guided diggers to a gushing source of underground water.

1645 – Athanasius Kircher tested the usefulness of a rod used by a diviner, by then suspending the same rod from a string. This time the rod failed to move when past over the drilling target identified by the diviner.

1850’s – Scientific methods for finding groundwater become available

Source: Chapelle 1997

subsurface. Two bores drilled just metres apart can yield quite differently, particularly if drilled into fractured rock.

The best possible outcome for groundwater supplies is obtained by engaging the services of a hydrogeologist and a water bore driller. Feasibility assessments for large groundwater supply projects should include examination of geological maps and remote sensing (eg. satellite imagery) to identify promising geological structures. Drilling targets are best optimized on a local scale by geophysical surveys (eg. resistivity or electromagnetic surveys) that detect anomalies in the sub-surface due to changes in sediment type or groundwater salinity. There is currently no scientific method that can accurately predict depth and yield and salinity of groundwater.

### Source and references

[www.connectedwaters.unsw.edu.au](http://www.connectedwaters.unsw.edu.au)

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