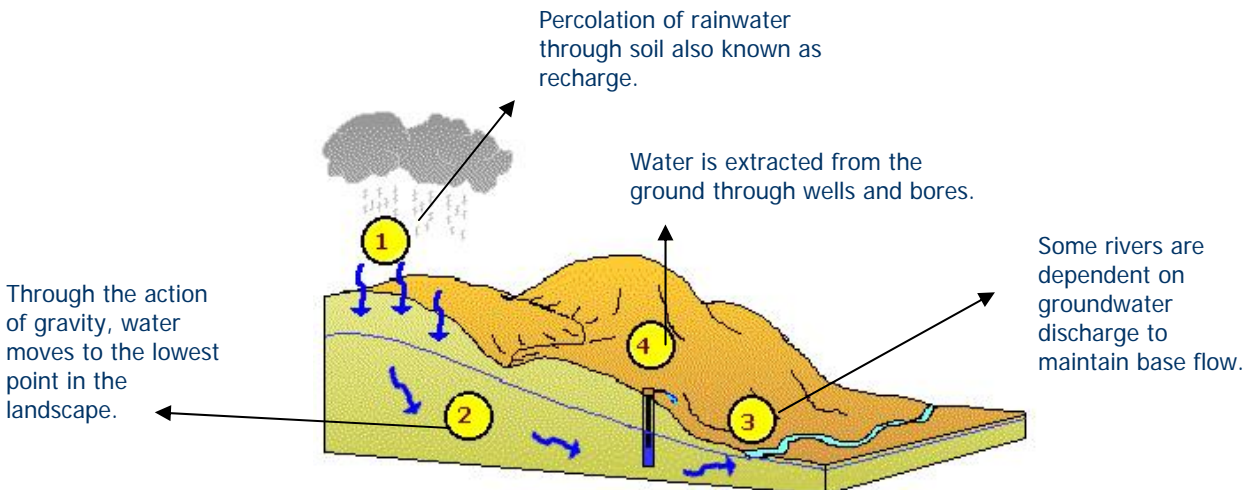


What is Groundwater and Where Does it Come From?

What is Groundwater?

Groundwater is by far the world's largest source of fresh water. It is estimated that the amount of groundwater is 400 times greater than all the fresh surface water in lakes, reservoirs, streams, and rivers. Groundwater is part of the water cycle. When precipitation falls on land, some water evaporates, some flows to streams and rivers, and some seeps into the soil and is absorbed by plant roots. Excess water in the soil may percolate further down until it reaches a level known as the water table where all the pores or openings in the soil or rock are saturated with water. Water in this saturated zone below the water table is called groundwater.



How is water stored in the ground?

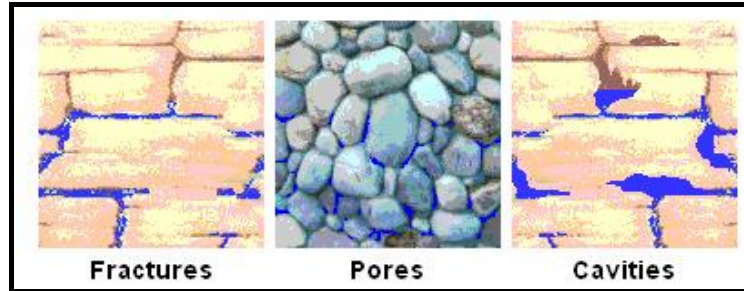
The rocks that form the crust of the earth often contain numerous open spaces that act as receptacles for holding the water that is found below the surface of the land. There are many kinds of rocks which differ greatly in their properties as holders of water. The occurrence of water in the rocks of any region is determined by the character, distribution and structure of the strata in the region, i.e. its geology.

Some rocks consist of loosely cemented grains of sand and the water is held in the voids between the sand grains. This is the case for the Mereenie Sandstone from which water is pumped to meet Alice Springs water supply needs.

Other hard rocks, such as granites, basalts, shale and quartzite's contain water in joints and fractures within the ground. Rocks, such as limestone and dolomites, may develop cavities within them because water dissolves away the rock. With time, these micro tunnels can develop into caves such as the Cutta Cutta Caves near Katherine.

If a sufficient water supply can be found in a permeable layer, it is called an aquifer. Groundwater can be found at depths up to several thousand metres, but generally is found at between 50 to 150 metres.

The Northern Territory relies heavily upon groundwater for many uses. Our knowledge about NT groundwater mainly derives from drilling and testing records of a network of some 36,000 bores drilled in the Northern Territory.



How long will groundwater resources last?

Groundwater can not be considered an *infinite* resource. When groundwater extraction exceeds the average rate of recharge then the groundwater system, as a whole, is no longer in equilibrium and groundwater levels will fall.

This fall in groundwater can be fast or slow and permanent or temporary depending upon the extraction rate, rainfall levels and the time it takes for an aquifer to recharge. There are aquifers in the NT that have such a slow recharge rate that modern extraction rates turn them into a non-renewable resource. An over-pumped river system can quickly be recharged when extraction ceases. An over-pumped groundwater basin does not quickly recover when extraction ceases.

How can we ensure the sustainability and continued use of groundwater reserves?

In much older groundwater systems, (such as the 10,000 year old aquifers of central Australia), recharge may have been much greater than what occurs today. Our estimates of present day sustainable extraction may be trial and error. This is why it is important that the department continues to monitor behaviour and trends in groundwater and its use. We all need to be aware that it is not an infinite resource.

For assistance, contact the Water Management Branch:

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