

## GROUNDWATER PICTURE OF THE MONTH

Picture of the month prepared by Andrew Stone, Hydrogeologist, (Andrewstonewater @ gmail.com)

### How about walking down to the bottom a well with your bucket to fetch water?!

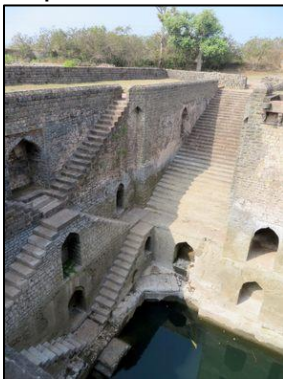
Did you know that there are over 3,000 stepwells in India with many others in arid countries. Water wells are typically constructed or drilled as simple vertical shafts. However, a stepwell is a large diameter excavation constructed to reach permanent groundwater. Access to the well-water is via a series of stone steps down from the surface to the well water. At a time of low groundwater, it takes several staircases of steps down to reach the water level.



**Chand Baori Stepwell, Abhaneri, State of Rajasthan, India**

Photo credit: Wikimedia Commons (Chainwit)

Locally known in India as *baoli*, the primary purpose of stepwells is to provide year-round availability for water, especially in arid and seasonally arid areas. To make groundwater available year-round stepwells are excavated to a depth just below the lowest expected groundwater level (water table). Steps in a series of staircases allow people to walk down to reach the water. As the groundwater level rises in the well, (in India, often as a result of seasonal monsoon rains) the lower steps become submerged and less staircases are used to reach the water.



**Ujala Stepwell,  
Mandu, Madhya  
Pradesh, India**

Photo credit:  
Victoria Lautman

The picture above shows the 100 ft deep Chand Baori stepwell. (The green color is the water!). The well was constructed in the 8<sup>th</sup> and 9<sup>th</sup> century and has a total of 3,500 steps in thirteen levels of stone staircases.

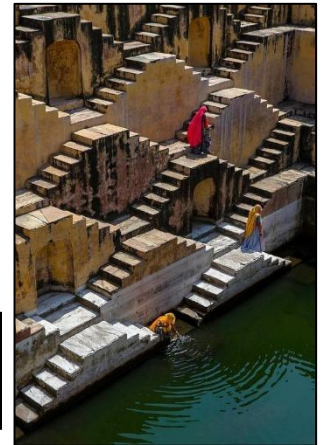
The picture on the left is of the 15<sup>th</sup>-16<sup>th</sup> century stepwell called Ujala. It has a less complex design than Chand Baori but operates on the same principle.

Stepwells had the primary secular purpose to supply water. However, over the centuries many took on additional significance that led to elaborate architecture and carvings to honor different religions and to give recognition to the dynasties and sultan rulers who financed the stepwell projects.

Still on the subject of history, during the 19<sup>th</sup> century when India was part of the British Empire, stepwells were decreed by colonial authorities to be

unhealthy, and water supply was provided by drilled wells. Many stepwells were then closed and some were filled in, fell into disrepair or became dumps.

Fast forward to the 21<sup>st</sup> century, and with increasing population, increasing aridity and monsoon-rain uncertainty, water managers in India have to consider all options. Many stepwells in India are now being cleaned out and recommissioned to augment supply sources. For example, groundwater is now restored as a supply source at stepwells in Jodhpur (Toorji ka jhalra stepwell) and in Rajasthan, (Moosi Rani Sagar stepwell). See links- ([Revivingstepwells](#)) ([BBC – stepwell restoration](#))



**Collecting step well water  
Jaipur, India**

Photo credit: muza.lab -

Click your browser for a search on stepwells for many sources of more information about these fascinating constructions that access groundwater. Wikipedia is a good starting point. Also, visit [stepwell atlas](#) for an interactive map of world stepwells (Note – the two stepwells listed for the USA don't function as traditional stepwells!)