LOW-COST BOREHOLES TO FACILITATE ACCESS TO DRINKING WATER

Description

We present a low-cost technology to drill manual drinking water boreholes. This technique is particularly useful in low- and mid-income countries, as it allows users to reduce the cost of accessing drinking water up to 95% in relation to market prices. This is because users provide the workforce. The technique can drill through soft materials such as alluvial sediments, and also through moderately hard rocks such as sandstone and laterite. The final result is a protected water well that meets drinking water quality requirements.

How does it work?

A heavy bit is tied to a cable, which in turn runs through a pulley attached to a tripod above the hole. The cable is pulled to lift the bit and then released to let it fall, thus breaking the rock. Loosened material falling to the bottom of the borehole is removed with a bailer equipped with a no-return valve. Thus, it can be loaded with water and loosened rock by moving it up and down. Debris is squirted into a mud pit, wherefrom the water flows back into the hole.

Advantages

This technique reduces drilling costs up to 95% in relation to current market prices for mechanized drilling rigs. Drilling materials can be found practically anywhere in the worlds. Users provide the workforce, which facilitates appropriation. Water availability during the dry season is guaranteed, as it is possible to drill tens of meters below the water table. In relation to traditional excavation techniques by means of pick and shovel, manual drilling removes the risks associated with working within the hole.

Where has it been developed?

This is an evolution of the Baptist drilling method that the members of UNESCO Chair "Appropriate Technologies for Human Development" (associated with the Environmental Hydrogeology Research Group) have developed. Research has been funded by AECID and has been carried out in Mali. Over thirty wells have been drilled so far, this being enough to supply water to 10.000 people.

And moreover

The research group currently develops numerous projects in the field of water. These include water quality and contamination, limnology, groundwater modelling, environmental issues and water law. Over the last decade the group has been particularly active in cooperation to development initiatives.

Researcher in charge

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