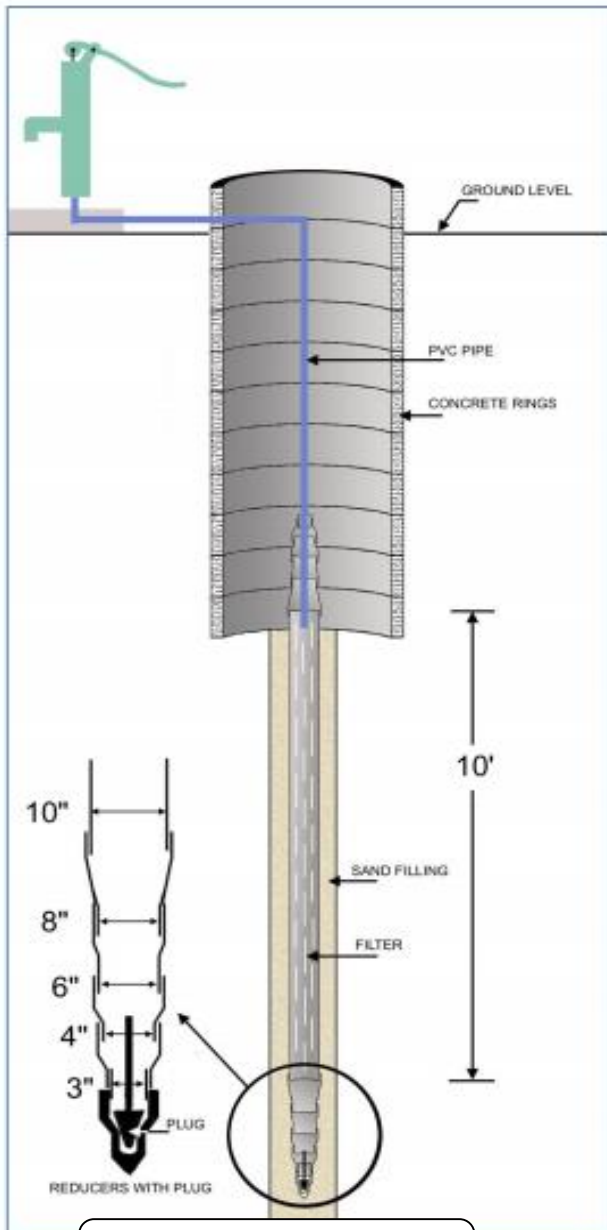


VISIT TO PROJECT WELL FIELD LOCATIONS NADIA AND NORTH 24 PARGANAS, WEST BENGAL

By, Arsenic Knowledge and Action Network - December 2015

Project Well is a Berkeley based non-profit organization founded by Dr. Meera M Hira-Smith. The history of Project Well goes back to 1996 when Dr. Hira-Smith started investigating methods of arsenic mitigation in North 24 Parganas, West Bengal. The foremost criteria that she arrived at were that any mitigation method suggested should be easily adaptable and cheap. The team created a program centred around the technique of the traditional dug well and with guidance from Mr. Protap Chakraborti, geologist and ex-director of Geological Survey of India, the first such dug well was constructed in Simulpur in May 2001.



Longitudinal section of Project Well
bore-dug well

Dug wells tap into the unconfined near-surface aquifer, where according to reports by the Project Well team, arsenic contaminations are characteristically low. It is important though that these wells are maintained and disinfected at regular intervals to prevent bacteriological contamination.

After a few years of rigorous monitoring and testing, the team decided that bore-dug wells may be a better option of providing year-round access to water.

These bore-dug wells have gradually increased in number across the three districts of North 24 Parganas, Nadia and Murshidabad, all three of which are identified arsenic hotbeds. From 2005 to 2011, 181 wells had been added to the existing 36 in 2004, totalling 217 by 2011.

The design of the Project Well bore-dug well has been modified and improved upon incrementally ever since the first design by Mr. Timir Hore, a hydrogeologist.

A longitudinal section of a bore dug-well is shown in the adjacent figure. The depth of the well is 8 meters (27 feet). The bore dug-well is 4.8 m (16 feet) below ground level and 1.2 m (4 feet) above ground level, with a 3 m (10-foot)-PVC pipe insert. Reducers are added that bring the total depth to 8 meters (27 feet).

This underground section is covered by a tin roof to prevent leaves and other debris from falling into the well. The well is disinfected at regular intervals by theoline, a chlorine based product.

The Arsenic Knowledge and Action Network, as part of its process of documenting the various available arsenic mitigation methods across the country, visited the Project Well locations in West Bengal in an attempt to understand the technique as well as explore the contextual feasibility of adopting this technique on other arsenic affected locations across the country. It is pertinent to understand the context of dug wells in India and how the usage patterns have evolved over the last couple of decades and more. Dug wells have been culturally grounded in the GMB plains as well as other parts of India for centuries. A study done by the School of Environmental Studies, Jadavpur University showed that community dug-wells were the primary sources of drinking water across the GMP plains.

Gradually through the late 80s and early 90s, there was a concerted effort to promote hand pumps as a safe source of drinking water due to the high prevalence of diseases caused by bacteriological contamination and the resultant diarrheal deaths, especially in parts of West Bengal and Bangladesh by various national and international agencies, including most visibly the World Bank.

The indiscriminate construction of hand pumps and tube wells that tapped the deeper confined aquifers, and the resultant over abstraction of ground water ever since is one of the important reasons attributed to the mobilization of arsenic in groundwater. Moreover, over the last 30-40 years, since this practice started, the water that came from these deeper unconfined aquifers was not tested for arsenic, and millions of people have since been getting exposed to high arsenic content. This has been the case in various parts of West Bengal too.

Because dug-wells are a familiar water source, communities easily learned how to properly use and maintain the dug-wells. It is important to note though that this design is based on the premise that the near-surface unconfined aquifer is characteristically arsenic free in the belt in which Project Well works, which is for now restricted to the three districts of Nadia, North 24 Parganas and Murshidabad.

The Network through its visit was able to identify a few important characteristic points about this model:

- 1) This model is able to bring together the advantages of dug wells as an arsenic safe source of water and the ease of a hand pump to abstract the water, overcoming one of the important factors that is preventing communities from going back to dug wells.
- 2) The contextual applicability of the Project Well model is based on the premise of the near-surface unconfined aquifer providing safe drinking water. This might not be the case in various other arsenic affected zones. A case in point is Bihar, where the hand pumps that tap into the near-surface unconfined aquifer has actually shown one of the highest arsenic content in the area (up to 40-50 times the WHO stipulated limit of 10 µg/l).
- 3) Many people in the community complained of taste of iron in the water. This has been one of the factors for the failure of these bore-dug wells in certain areas.
- 4) This model places the onus of maintaining and disinfecting the dug well on the community and hence brings a sense of common responsibility to the cause, as should be the case in the successful management of a common property resource like water.

- 5) The standard depth and diameter of the design makes dosage of the chlorine based disinfectant, easier to administer.
- 6) While the model might not be directly replicable in other parts, the basic aim of providing the pluses of modern as well as traditional methods in the same model is something that should be aimed to be adapted in other arsenic affected areas. This is more the case, since dug wells have are identified as an arsenic safe source of water.

For more information please visit: <http://projectwellusa.org>

Or contact: info@thewellproject.org