Guidelines for use of wells and groundwater protection in the tsunami-affected coastal areas, relevant after ten months after the tsunami

Preamble

When the tsunami struck Sri Lanka, wells and groundwater were impacted severely. Wells up to 1.5 km inland were flooded and groundwater was salinized by seawater infiltrating through soil and trapped water pools. Ten months after the tsunami, the salinity in the affected areas is still above background levels[1]. Therefore enforced precautions are needed for the use, rehabilitation and protection of wells and groundwater. The following guidelines are applicable to the situation prevailing at and after the first dry season after the tsunami, primarily on the East coat of Sri Lanka

The recommendations are based on a study by IWMI[1], field level experience and internationally accepted guidelines. It is important to carefully follow the guidelines and seek professional assistance if in doubt.

Guidelines

1. Do not pump/clean wells to decrease salinity. In fact, over-pumping can increase salinity.

2. Do not repeatedly empty wells. Empty wells only at the end of the dry season, e.g. to remove sludge and debris and to chlorinate when little water (< 1m) is in the well. This applies to both tsunami-affected and non-affected wells.

3. Do not repeatedly chlorinate wells. A single shock-chlorination strictly following standard procedures[2] and minimizing pumping[3] can be done.

4. Drinking water should be purified separately (e.g. by chlorine tablets, by boiling, or by the SODIS (Solar Disinfection) method[4].

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[1] See IWMI report: 'Tsunami Impacts on Shallow Groundwater and Associated Water Supply on the East Coast of Sri Lanka', Oct., 2005.

[2] http://www.who.int/water_sanitation_health/hygiene/envsan/technotes/en/

[3] Strike a balance between pumping intensively and quickly to remove only water standing in the well, and not disrupting or destroying the well structure from cave-in due to high pressure force from surrounding sediments and water entering the well.

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5. Wells that are salty or becoming salty should be pumped less or abandoned temporarily, and freshwater should be sought from neighboring wells that are not salty.

6. Abandoned wells should be covered to reduce the risk of mosquito breeding. Even some wells that are being used are mosquito positive. Cover all domestic and agro wells to prevent mosquito breeding.

7. Large scale abstraction (like for bowsers and agro-wells) from single wells should be avoided. Apportion abstraction to more, inter-changeable wells.

8. Deep wells (> 5 m) and wells pumped intensively with motorized pumps (agro and bowser) should be regularly monitored for salinity, at the top and bottom of the well.

9. Preferably, pump from shallow wells (< 5m). Avoid pumping close[5] to the coast and lagoons with salty/brackish water, tsunami-flooded areas, other intensively pumped wells and other sources of pollution, like dumpsites, cemeteries and petrol stations.

10. Wells should not be deepened in the coastal aquifers(groundwater systems) in an attempt to avoid saltwater. This will result in more salt water intrusion.

11. New deep wells (> 10 m) should not be drilled in the coastal aquifers in an attempt to get fresh water.

12. Stagnant water bodies that are not polluted and do not cause health concerns from e.g. vector borne diseases can be left to replenish and flush the aquifer.

13. Depending on the soil conditions, the deliberate collection and infiltration of rainwater and excess run-off should be encouraged, provided that health risks from e.g. vector borne diseases are taken into account.

14. Keep a record of well treatment activities for future reference.

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[4] http://www.sodis.ch/
[5] within 200 m for low abstraction wells, and 500 m for high abstraction wells

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