Water Missions International

Success Standards for Community-Managed Water Supply Projects

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Water Missions International is a nonprofit Christian engineering ministry providing sustainable safe water solutions, through a Christian world view perspective, to people in developing countries and disasters. In the context of community-managed water supplies, the organization defines a successful project as one that brings about physical, social, economic and spiritual transformation in a defined service area through the provision of sustainable access to safe water. In order for this to be possible, the safe water solution must be managed and promoted in a technically and financially stable manner.

The following table summarizes the success standards that have been adopted based on this definition. Standards relating to water quality (standards 1 through 3) can be achieved immediately upon commissioning. Standards relating to management capacity and the financial stability of the project (standards 4 through 7) should be achieved as soon after commissioning as possible. Standards that affect public health (standards 8 through 10) may take months if not years to achieve.

Table 1: Success Standards

Driver	Success Standard
Water Quality	1. Free chlorine residual in treated water at tap is ≥0.2 [1,2,3] and ≤0.5 mg/L [1,3]
	2. Turbidity of treated water is ≤5 NTU [1,4]
	3. Total coliforms are undetectable by membrane filtration technique [5] in any 100 mL sample of treated water [1,6]
Management Capacity	4. Safe Water Committee holds general meetings and meets regularly to discuss issues related to the safe water project
	5. Safe Water Committee completes and submits all reports required by specific country program
Financial Stability	6. Income from water collection fees and additional revenue sources exceeds operational and replacement costs
	7. Revenue in excess of operational expenses is deposited in a bank account
Public Health	8. Safe water, sanitation and hygiene practices have been discussed in all households according to standard curriculum
	9. ≥80% of households in the defined service area are using water supplied by the safe water solution
	10. Each beneficiary household uses ≥70 L (18 gal) of water supplied by the safe water solution per day

Water Missions International bases the standards outlined in this document on the following definitions:

Safe water – Water that is free from suspended and dissolved[i] contaminants that pose a risk to human health. For this to be possible:

- *E. coli* or thermotolerant bacteria must not be detectable by membrane filtration technique[5] in any 100 mL sample of water intended for human consumption when taken bi-weekly[1,6].

Basic Access – The ability to obtain an amount of safe water necessary to meet basic human health and hygiene needs on a daily basis. For this to be possible:

- Each individual must have access to at least 5.8 L (1.5 gal) of safe water on a daily basis. When feasible, each individual should have access to 13.5 L (3.5 gal) of safe water each day regardless of whether or not that amount is actually used[ii].
- Each household must be within 0.5 km from a safe water access point[4].
- Total collection time including time spent walking, waiting, and collecting water must be no longer than 30 minutes per person[1,4].
- The portion of daily household income spent on water should not exceed 3%[7].

[i] The Living Water Treatment System™ is capable of removing all suspended contaminants and a fraction of dissolved contaminants. Alternative sources must be considered when water quality assessment indicates the presence of dissolved contaminants.

[ii] A limit is not defined for number of people per tap because taps can be designed to meet the constraints that are included in this definition.

The volume of water required for each individual to be able to practice adequate health and hygiene is calculated based upon the following assumptions:

Water intake – quantity of water required for hydration during manual labor in high temperatures and during lactation is 2.2-5.5 L (0.5-1.5 gal) per person per day[8]

Sanitation and hygiene practices – quantity of water required for sanitation, handwashing, bathing and washing dishes varies depending on service level and is difficult to estimate but is likely to be 2-6 L (0.5-1.5 gal) per person per day[4]

Cooking needs – quantity of water required for cooking a nutritionally adequate amount of rice is 1.6-2 L (0.4-0.5 gal) per person per day[8]

Household size – number of people living in a typical household is 5

[1] World Health Organization. (2011). Guidelines for Drinking-Water Quality, 4th Ed. Geneva.
[2] United States Environmental Protection Agency. (1998). National Primary Drinking Water Regulations: Surface Water Treatment; Final Rule. Federal Register. 54(124):27494.
[3] Lantagne, D. (2008). Sodium hypochlorite dosage for household and emergency water treatment. Journal of the American Water Works Association. 100(8):106-119.
[4] The Sphere Project. (2011). Humanitarian Charter and Minimum Standards in Humanitarian Response. Practical Action Publishing. Rugby, UK.
[5] American Public Health Association. (2005). Standard Methods for the Examination of Water and Wastewater, 21st edition. American Public Health Association. Washington, D.C.
[6] United States Environmental Protection Agency. (1989). National Primary Drinking Water Regulations: Surface Water Treatment; Total Coliform Rule. Federal Register. 54(124):27544.
[7] United Nations Development Programme. (2006). Human Development Report; Beyond scarcity: Power, poverty and the global water crisis. New York, NY, USA.
[8] Howard, G., J. Bartram. (2003). Domestic water quantity, service level and health. WHO. Geneva.
[9] Myers, B. (1999). Walking With The Poor. World Vision International. Maryknoll, NY, USA.