

AIDF Global Disaster Summit 2016

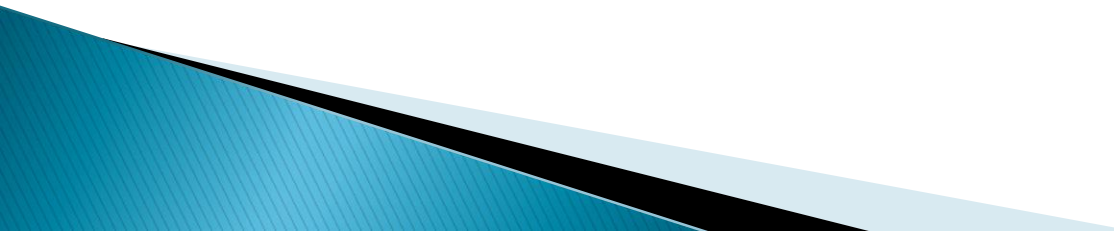
WASH

Keith Norris, World Hope International

❖ Quality requirements and guidelines for drinking water in the field

- ▶ In emergency, the focus is often on microbiological contamination
- ▶ Water source should be free of Fecal coliform
- ▶ The well water should have chemical quality meeting World Health Organization (WHO) guidelines as well as country standards if they are available
- ▶ Need to ensure that water has low turbidity (5 NTU, pH of 6.5–8.5)

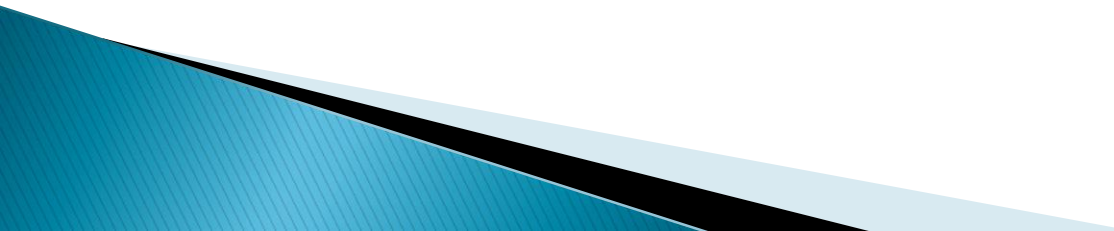
WHO guideline/country standards should be adopted

- ▶ Water given to a community should meet basic quality standards/meet WHO guideline
 - ▶ Testing at reliable labs should be required
 - ▶ Failure to meet the standards should result in treatment options
 - ▶ If treatment is not an option then abandon and cap the water source
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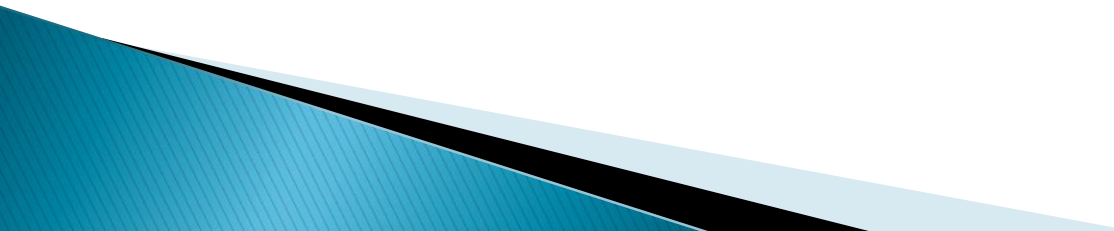
❖ Ensuring access to water and sanitation for crisis-affected population

- ▶ Dry season meant lack of water
- ▶ In West Africa – access to water & sanitation was vital to the fight against Ebola
- ▶ Infection risk from poor sanitation was high
- ▶ Water needed for constant disinfection, drinking, handwashing, bathing
- ▶ Shallow wells could not provide adequate and “safe” water
- ▶ Yet large volumes of water were required in isolation centers over all of Guinea, Sierra Leone & Liberia (tankers could not meet demand)

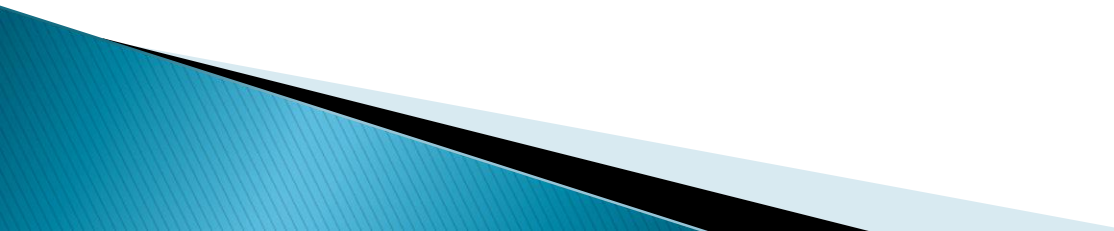
Boreholes were a good option

- ▶ Often on site
 - ▶ Quick to drill (3 to 6 days)
 - ▶ Taps deeper aquifers which are less prone to bacterial contamination
 - ▶ Year round water supply
 - ▶ Infrastructure remains long after the crisis
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- ▶ With funding from DFID, WHI drilled 24 boreholes (wells) in Sierra Leone at Ebola isolation centers during the crisis.
 - ▶ Drilled 40 other community wells during the Ebola emergency period.
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Where Boreholes are Appropriate

- ▶ IDP/Refugee Camps (No existing infrastructure)
 - ▶ Medical facilities – Ebola isolation & treatment centers
 - ▶ Quarantined Communities
 - ▶ Where existing water points have been contaminated (Ebola burial sites)
 - ▶ Wherever water is scarce
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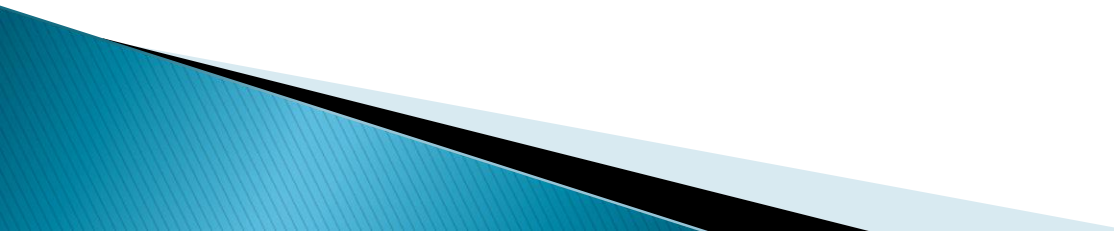
Boreholes – Safe Water?

- ▶ In the US, about 15% of the population still get their water from boreholes
 - ▶ Most often provide safe water at the source without treatment
 - ▶ Some studies from Africa indicate that the microbiological quality of water from boreholes is reasonably high
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RAPID ASSESSMENT OF DRINKING WATER QUALITY IN THE FEDERAL REPUBLIC OF NIGERIA

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Thermotolerant Coliform Compliance to WHO Standard

- ▶ Boreholes 94% compliant
 - ▶ Piped water 77% compliant
 - ▶ Protected hand dug 56% compliant
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Impact Evaluation of the Mozambique Rural Water Supply Activity

August 2014



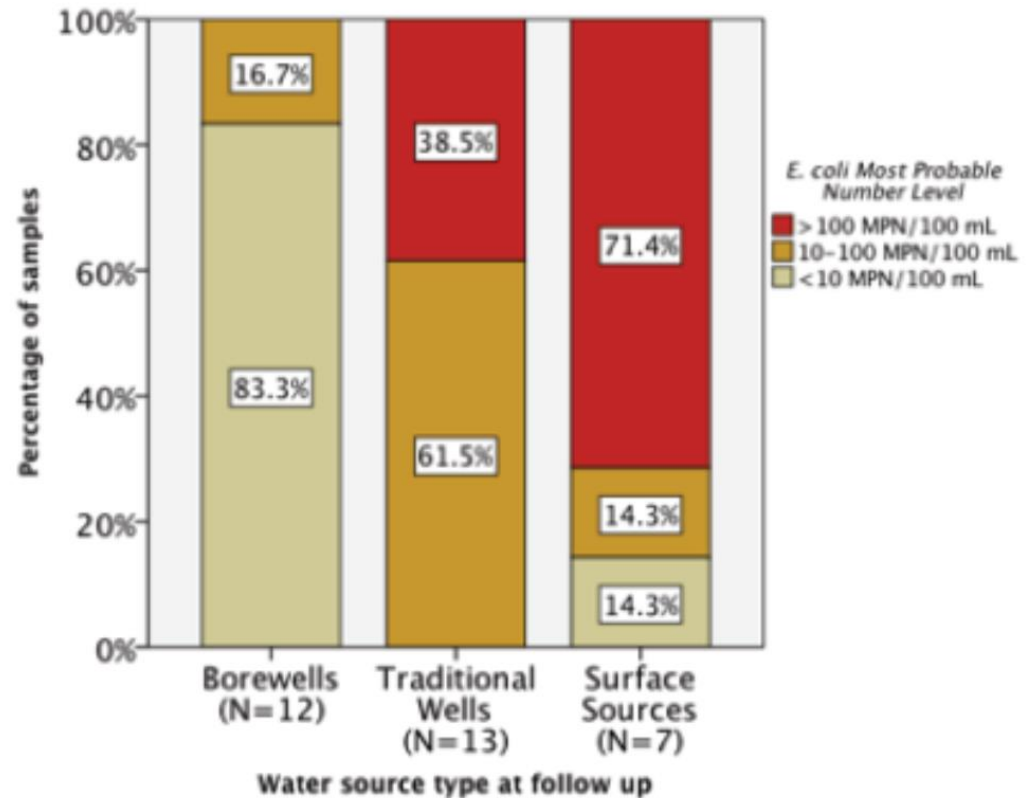
STANFORD
UNIVERSITY

Ralph P. Hall, Jenna Davis, Emily van Houweling, Eric A. Vance,
Marcos Carzolio, Mark Seiss, and Kory Russel

Samples taken at source

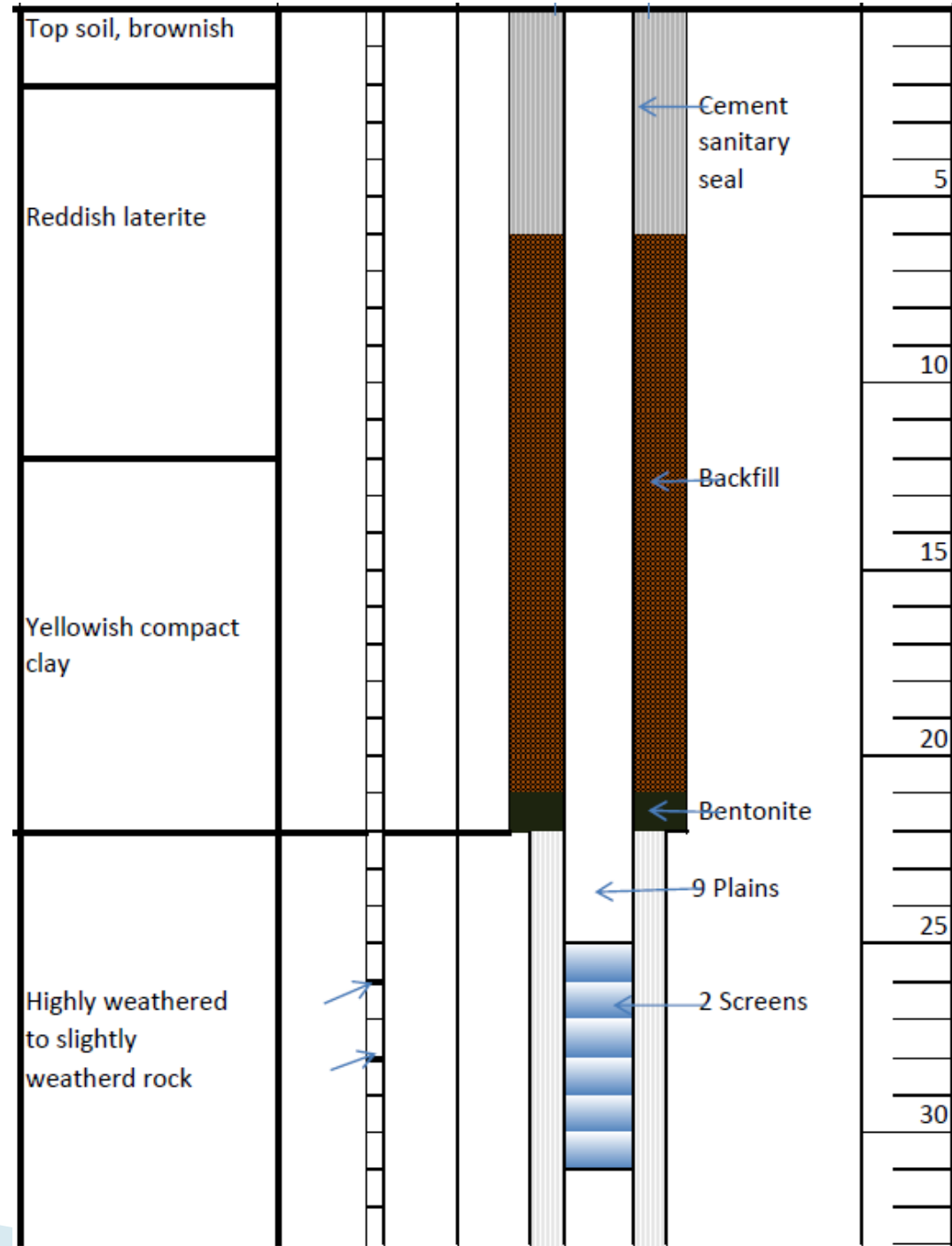
E. coli results

- ▶ Water sampling in 11 communities
- ▶ 32 community water sources



Borehole Design

- 2 Sanitary seals
- Lower seal at aquatard layer
- Backfill with clay cuttings if possible; no organic matter

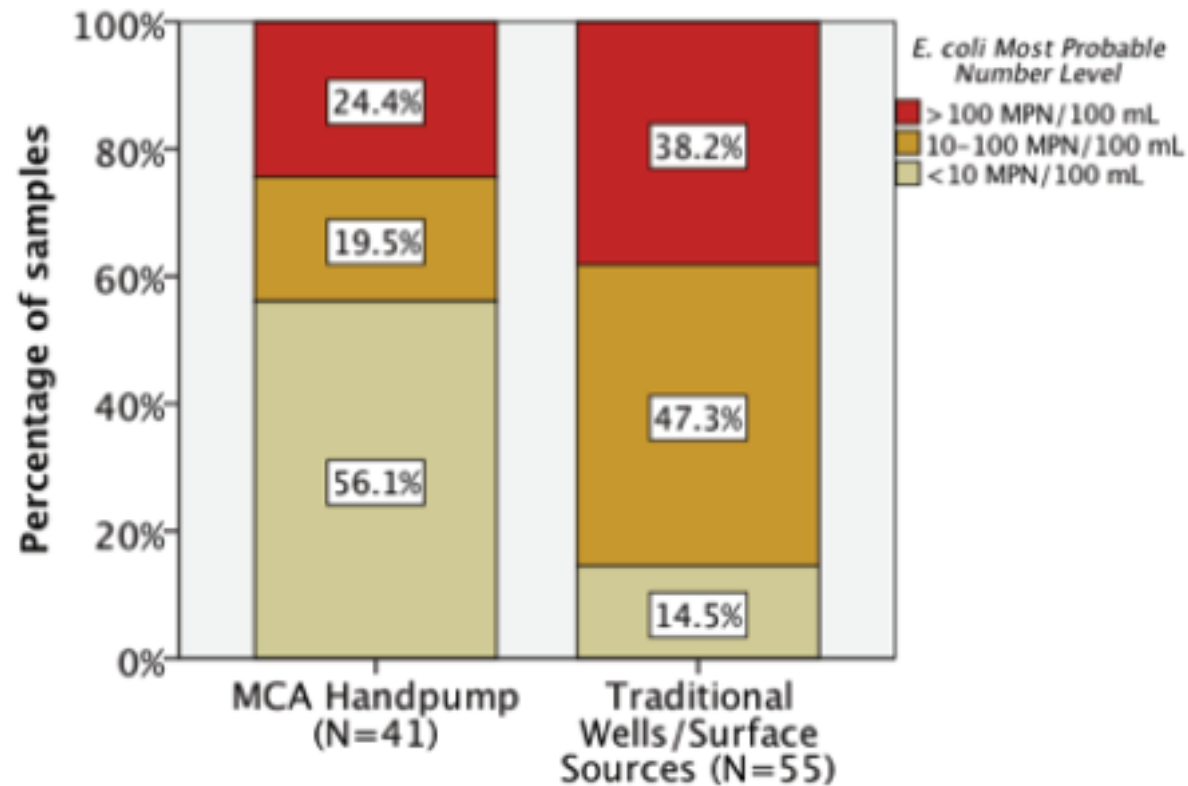


Biological Degradation

(Quality of Stored Water in Households)

873 household
containers
were tested

E. coli results



Chemical Problems – Nigeria

RAPID ASSESSMENT OF DRINKING WATER QUALITY IN THE FEDERAL
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Overall compliance to all WHO Guidelines (physical, chemical, bacteriological)

- ▶ Boreholes 86% compliant (dropped 8%)
- ▶ Pipe Water 77% compliant
- ▶ Protected hand dug 50.7 % compliant