WATER:
Environmental Compliance Requirements
& ESDM Considerations

Environmental Compliance/ESDM Training Workshops
Lake Naivasha, Kenya • January & February 2010
In SSA, diarrheal disease is the leading cause of death for children under 5, directly resulting in the death of ~2.6% of all children born in the region.

In addition to direct fatalities, diarrheal diseases worsen malnutrition and weaken the immune system, leading to decreased resistance to other diseases (e.g. Malaria.)

Ingesting contaminated water is the overwhelming cause of diarrheal disease.

Poor access to water makes good hygiene difficult → thereby increasing disease

In many rural areas (particularly arid ones), time spent fetching water adversely affects girls’ education and women’s income-generation opportunities.
Therefore. . .

- Water (& sanitation) has been and continues to be a key focus of USG and other donor assistance in Africa
- A “water focus” has been built into this workshop
  - *Indicators exercise: water and sanitation sectors*
  - *Water an aspect of almost every field visit*
  - *This session*

**MDG 7c**
Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

**USG: Paul Simon “Water for the Poor” act** makes affordable & equitable access to potable water and sanitation a key component of U.S. foreign assistance.
Because water and health are so closely linked, water interventions have several important environmental compliance requirements. . .
Health Threat: Arsenic in Groundwater

- A potent & bio-accumulative poison → skin lesions, neurological disorders, skin lesions, heart & lung disease, cancer
- Occurs naturally in geologic formations and can move into groundwater
- No way to predict which formations contain arsenic. May be significant variations within an aquifer.
- Can be mobilized by human-induced changes to hydrology (mining, irrigation, flood control)
- In 1980s, widespread poisoning in Bangladesh/West Bengal (India) highlighted the issue
  Today ~3000 Bangladeshis die each year of As-induced cancer; 2 mn live with chronic As poisoning
  Poisoning occurred when villages switched from surface water to “cleaner” tube wells
COMPLIANCE REQUIREMENT:
Arsenic Testing

USAID policy requires:

TESTING of water supplied by any USAID-funded well/borehole for INORGANIC arsenic:

• Test initially (prior to public provision of the water and after the borehole “stabilizes”)

• Test quarterly thereafter for 4 quarters.

• Use the Hach Arsenic test kit (www.hach.com). (EZ test kit acceptable.)

If arsenic is at ANY time over 10ppb, test must be re-done by a qualified laboratory. If the result is confirmed, the well must be decommissioned.

Tests must be performed on EVERY well.

Arsenic cannot be removed by common filtration or boiling

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Health Threat:
Fecal-Oral Route Pathogens

- Ingesting water contaminated with fecal-oral route pathogens is the leading cause of diarrheal diseases
  - Dysentery, Cholera, Typhoid, other gastroenteritis, (and also hepatitis, shistosomiasis. . .)
- These diseases are a leading cause of infant & young child mortality
- Shallow groundwater easily contaminated by latrines, livestock, exchange with surface waters.
- Shallow wells tapping “clean” groundwater easily contaminated by dirty buckets, ropes, & soil.
- Water from boreholes can be contaminated by seepage thru a faulty sanitary seal or can be contaminated at the tap.

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Fecal coliform bacteria species are not especially harmful themselves, but indicate that water is likely contaminated with fecal matter, and fecal-oral route pathogens may be present.

As we have seen, testing is easy and quick . . .
COMPLIANCE REQUIREMENTS:
Fecal Coliform Testing, Best Practices

USAID AFR IEEs require:
1. TESTING of water supplied by any USAID-funded well/borehole/public tap for fecal coliform:
   • As a practical matter, follow the same testing regime as arsenic, and test at the same time.
   • If fecal coliform is detectable in an 100ml sample, water must be treated/filtered, source of contamination eliminated, or contamination route blocked.

2. GOOD PRACTICES to minimize fecal-oral route transmission (and other problems)

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Good practices. . .

IEEs define good practices by reference to the Small-Scale Guidelines

The basic minimum of “good practice” has been distilled into the Visual Field Guide—but this is not a substitute for the full Guidelines chapter.

Partners then translate the general IEE condition into specific practices in their EMMP