2.500 Desalination and Water Purification
Spring 2009

For information about citing these materials or our Terms of Use, visit: http://ocw.mit.edu/terms.
2.500 Desalination

Amanda Adams
Ray Ginther
Amy Smith
April 23, 2009
Overview

• Introduction to Mercy and Sharing
• Description of Paulette and Phaeton
• Availability of materials in Cap Haitien
• Questions
Phaeton feeding program
Phaeton feeding program
Paulette

- Population: 1750 (~350 families)
- 12 sources of water:
  - 1 pumped freshwater system
  - 3 community wells with (broken) hand pumps
  - 8 hand dug bucket wells
Pumped water system
Pumped water system
Community well
Broken hand pump
Hand dug bucket wells (private)
Hand dug bucket wells (private)
Broken rainwater system
Broken rainwater system
Phaeton

- Population: 2450 (~500 families)
- 9 sources of water:
  - 1 pumped freshwater system
  - 1 community wells with (broken) hand pumps
  - 7 hand dug bucket wells
- Sisal plantation, now closed, used to employ the majority of the residents.
Pumped water system
Community well
Community well
Community well
Hand dug bucket well (private)
Main Street, Phaeton
Main Street, Phaeton
Abandoned Sisal factory
Boat building
## Salinity field data

<table>
<thead>
<tr>
<th></th>
<th>Paulette</th>
<th>Phaeton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumped system</td>
<td>450 ppm</td>
<td>650 ppm</td>
</tr>
<tr>
<td>Community wells</td>
<td>3,000 ppm</td>
<td>1,200 ppm</td>
</tr>
<tr>
<td>Private bucket wells</td>
<td>2,300 ppm</td>
<td>3,500 ppm</td>
</tr>
</tbody>
</table>
Some economics

- “Sweet” water is 1 gourde per bucket
- Each family uses about 5 buckets per day
- Which is about 10% of their income
Some economics

- 350 families x 5 buckets per family x 1 gourde per bucket = ~$45/day

- Diesel price:
  - Current price: $2.25/gallon
  - “Normal” price: $3.00/gallon
Cap Haitien

Available materials
Metellec Hardware
Hinges and handles
Paint and glue
Tools
PVC connectors
Wire and plastic sheeting
Windows
Pumps
Batteries
Pipe, extrusions and flat bar
More PVC (when it’s there)
Electronics shop
Bike parts and supplies
Hole in the wall welding shop
The forge
Questions???