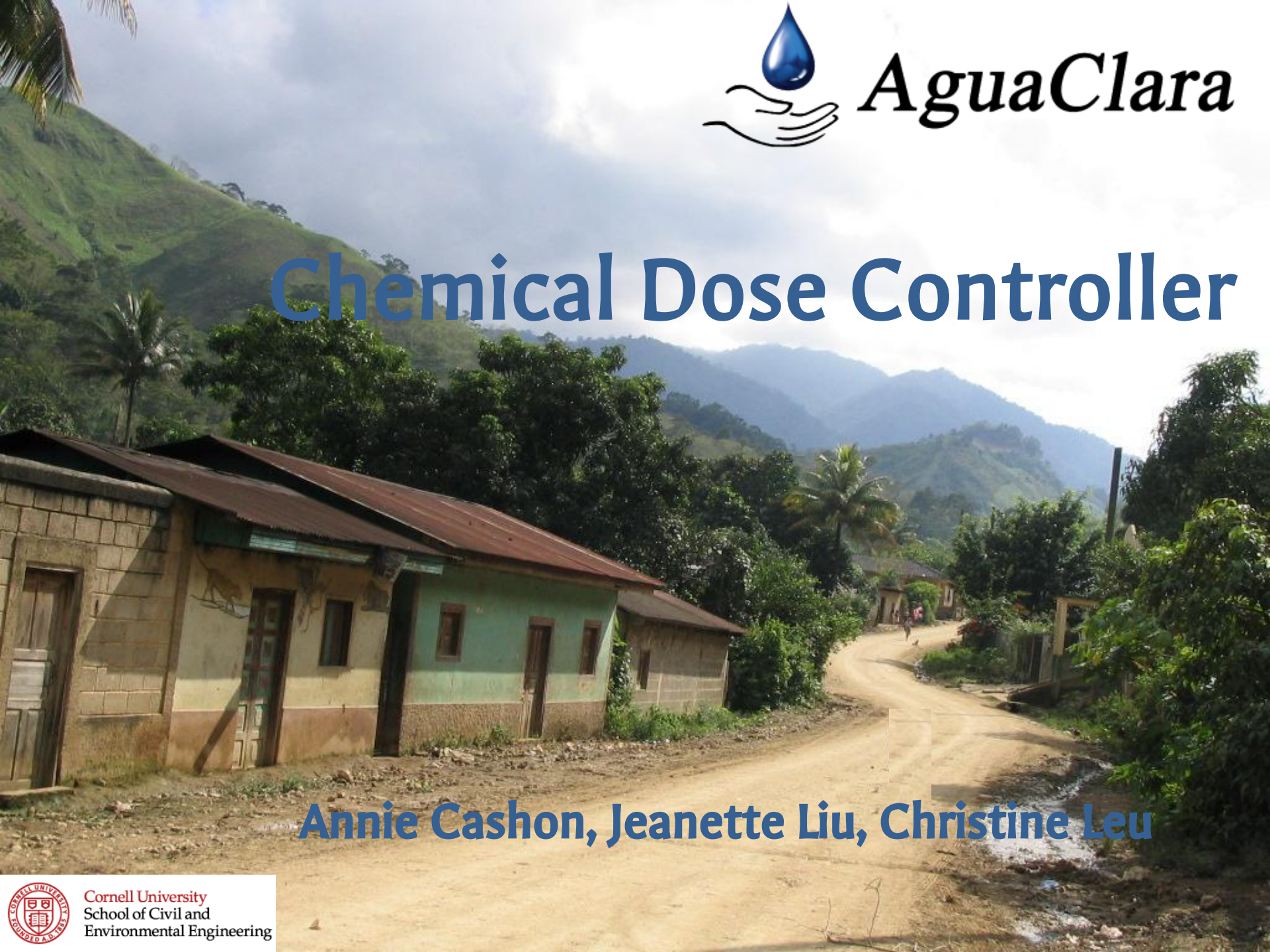

AguaClara

Chemical Dose Controller

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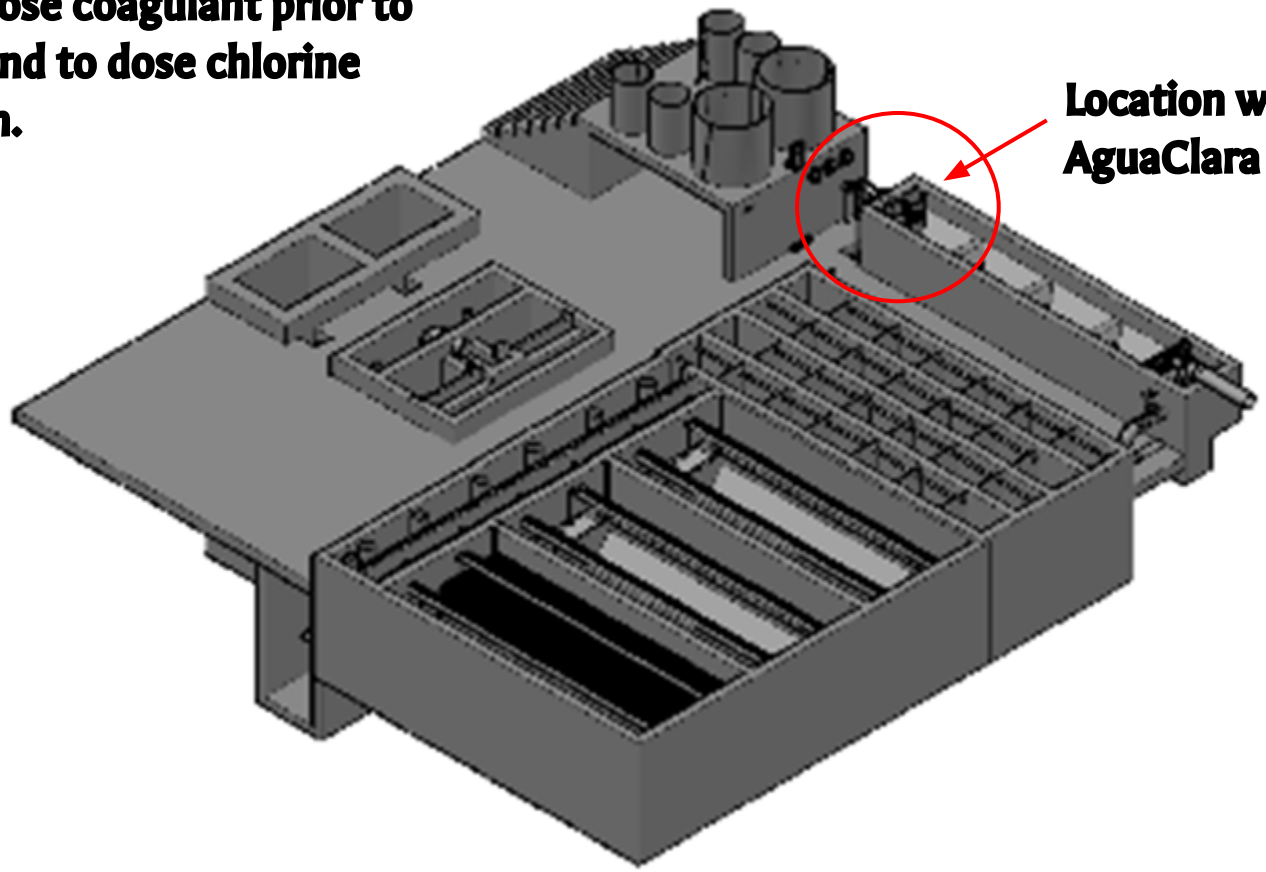
Background

Purpose: To dose coagulant prior to flocculation and to dose chlorine after filtration.



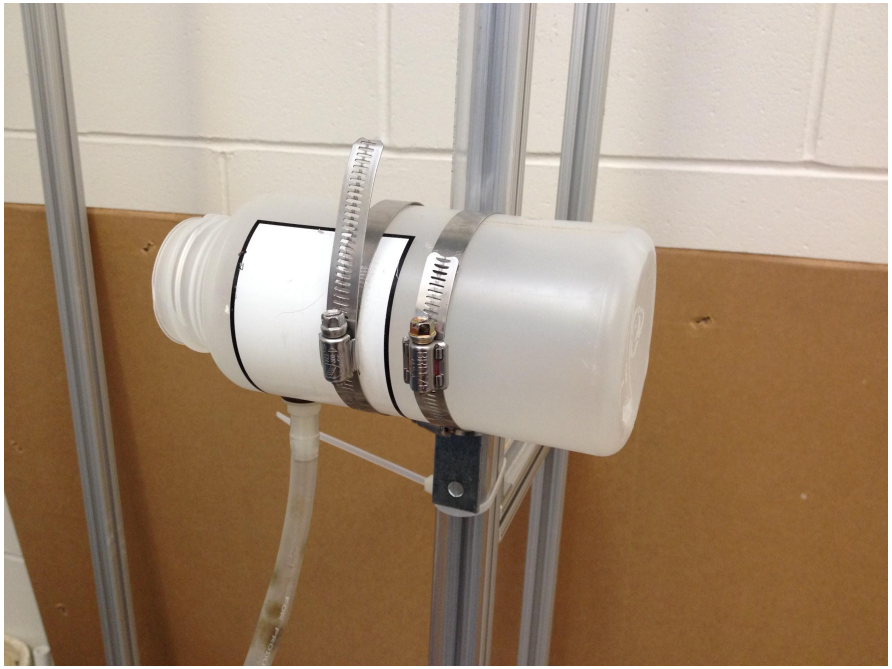
Location within an AguaClara Plant

Completed Tasks

- Eye-Bolt Experiment
- Constant Head Tank
- Air Purge System
- 10 cm Headloss Experiment
- Shipping to India

Constant Head Tank

- Researched and compared three designs
- Nalgene bottles, trough design, clear PVC
- Nalgene bottle is the most practical



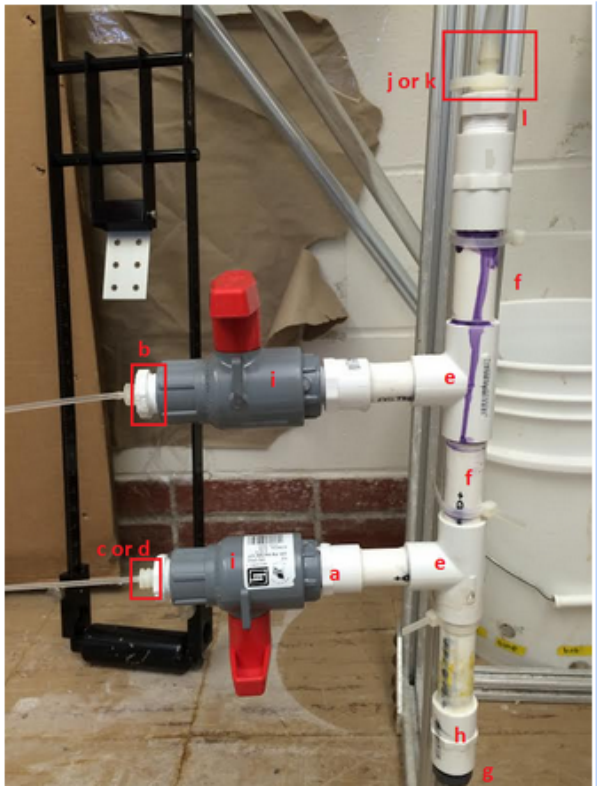
Air Purge System

- Removed push-to-connect pieces
- Barbed-wye fitting
- Syringe to remove air
- Hospital pumps

Set up Manual

- Process and Setup
- Inventory
  - Image
  - Catalog number
  - Dimensions
  - Quantity

f. 1/2" PVC pipe (cut into three ~3" sections and two 2" sections per manifold)
g. Hex Head Plug
h. ½" Threaded to Unthreaded Adapter (female female)
i. ½" CPVC ball valve (2 per manifold)
j. 1/2" threaded to 1/4" barbed tube fitting
k. 5/16" OD barbed to ⅜" OD male threaded
l. ⅜" ID threaded female to ½" threaded male bushing (2)



1/2" CPVC ball valve	5052K21	2 per manifold	McMaster-Carr	
1/2" Threaded to 1/2" Barbed PVDF	5228K28	1	McMaster-Carr	
1/2" threaded to 1/4" barbed tube fitting	5372K114	1	McMaster-Carr	

Shipping to India

	UPS	Fedex	USPS	ipsparcel.com	shipito.com	Baggage
10 lbs	256.71 USD	267.30 USD	78.25 USD	163.13 USD	64.84 USD	25 - 50 USD
20 lbs	256.71 USD	434.92 USD	78.25 USD	X	X	25 - 50 USD

Conclusion:

- Restrictive prices
- Reliability
- Package size
- Item avaliablilty

Testing Headloss: Callibration

Purpose: to ensure accuracy

- Zero position of lever
  - Lever parallel to ground
- Water level in CHT equal to water level at lever outlet
- Step indicates lever position

Testing Headloss: Callibration

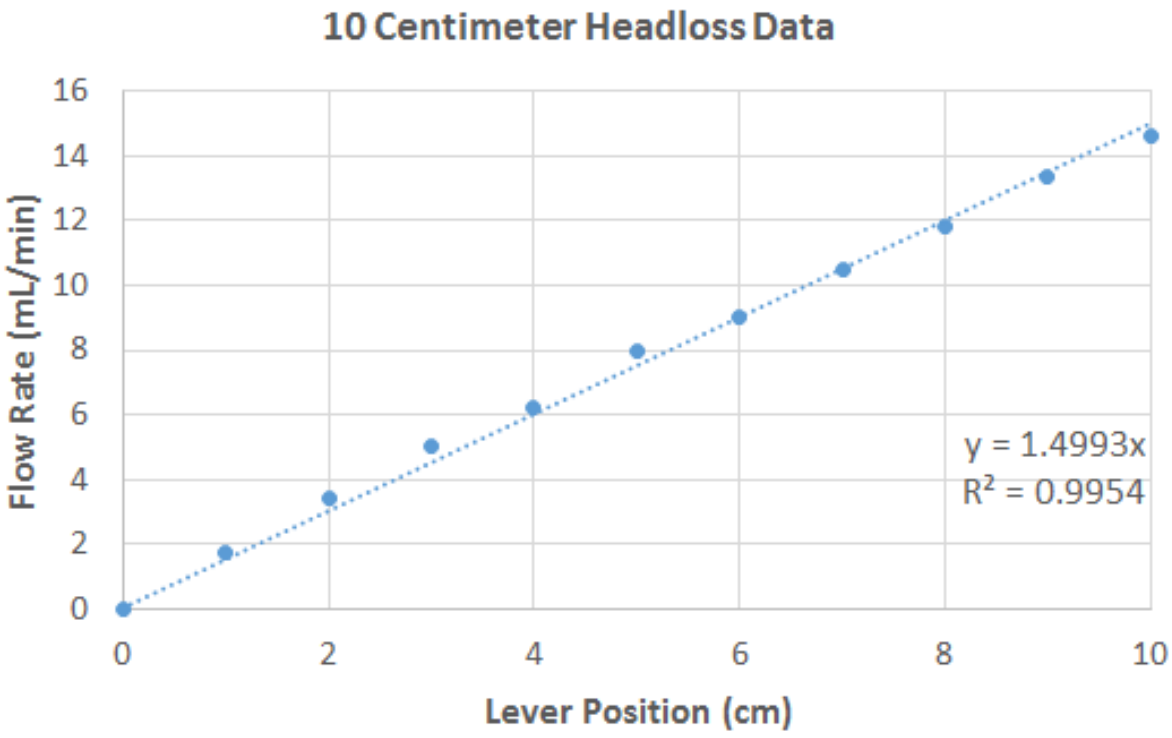
Water level of CHT is equal to water lever at lever position 0

Testing Headloss: Results

Purpose: Demonstrate that the setup is dominated by major headlosses

Results:

- Relatively linear trend
  - 16th inch tubing
- Flow: 1.5 mL / min
- R2 value: .995



Testing Headloss: Improvements

Future Tests

- Slider at different positions
- Larger tubing

Testing Improvements

- Precision of the step
- Tightening connectors
- Remove the water that builds up in the t connector
- Adjusting the Constant Head Tank

Future Work

- CDC setup manual
- Determine flow range for the mini float valve
  - Larger float valve
- Continue testing headloss
- CDC Modular Design Demonstration in Honduras

Questions?