

iDesign

Filo Verde, Panama



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Overview

- Introduction
- Data Collection
- Final Design
- Cost Estimate
- Schedule



Background

- Filo Verde, Bocas Del Toro, Panama
- Peace Corps volunteers:
 - Jordan (Toly) Varble
 - Sarah (Beli) Varble



Community

- Native language is Ngäbe
- Community is between two rivers
 - Río Caño Clarita
 - Río Caño Sucio
- Community has:
 - 49 homes
 - 21 latrines (11 in use)



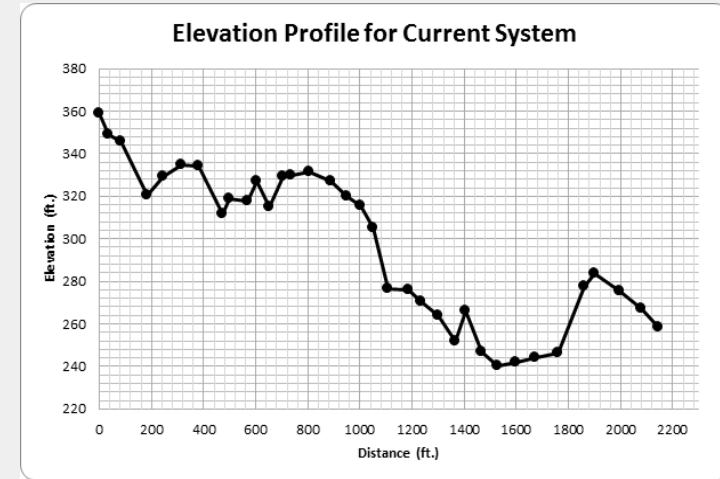
People

- About 375 people
- Most of the community is below 20 years old
 - 6-10 children per woman
- Highest grade level is 6th grade
- School in village is relaxed



Current Water System

- Twenty year-old gravity fed system
- Reinforced concrete water tank
- Many problems:
 - Water flow is unreliable
 - Pipes are not fixed properly when broken
 - System is becoming too small
 - 5 houses are above the tank
- Rehabilitation for the system

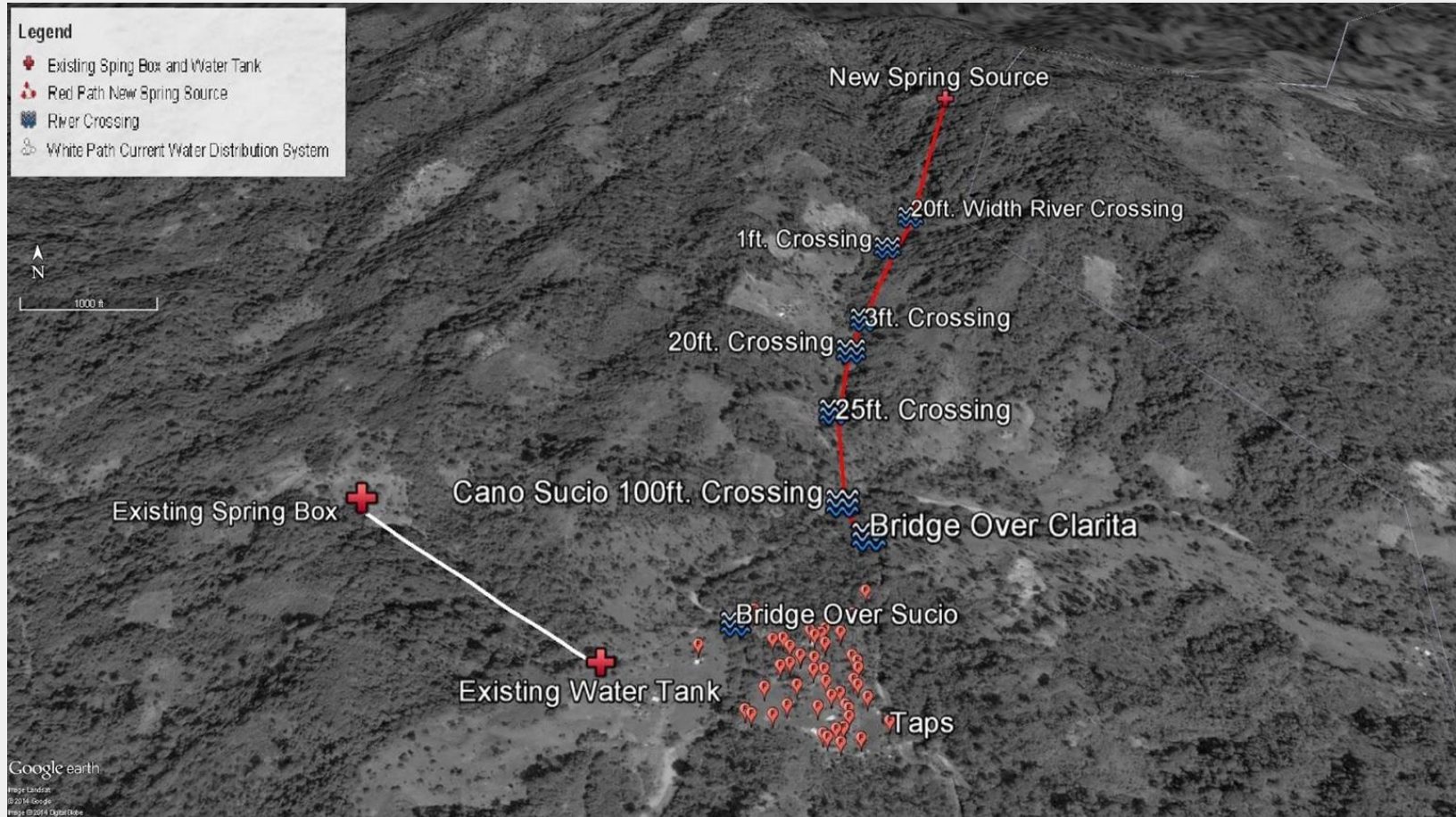


Data Collection-Surveying

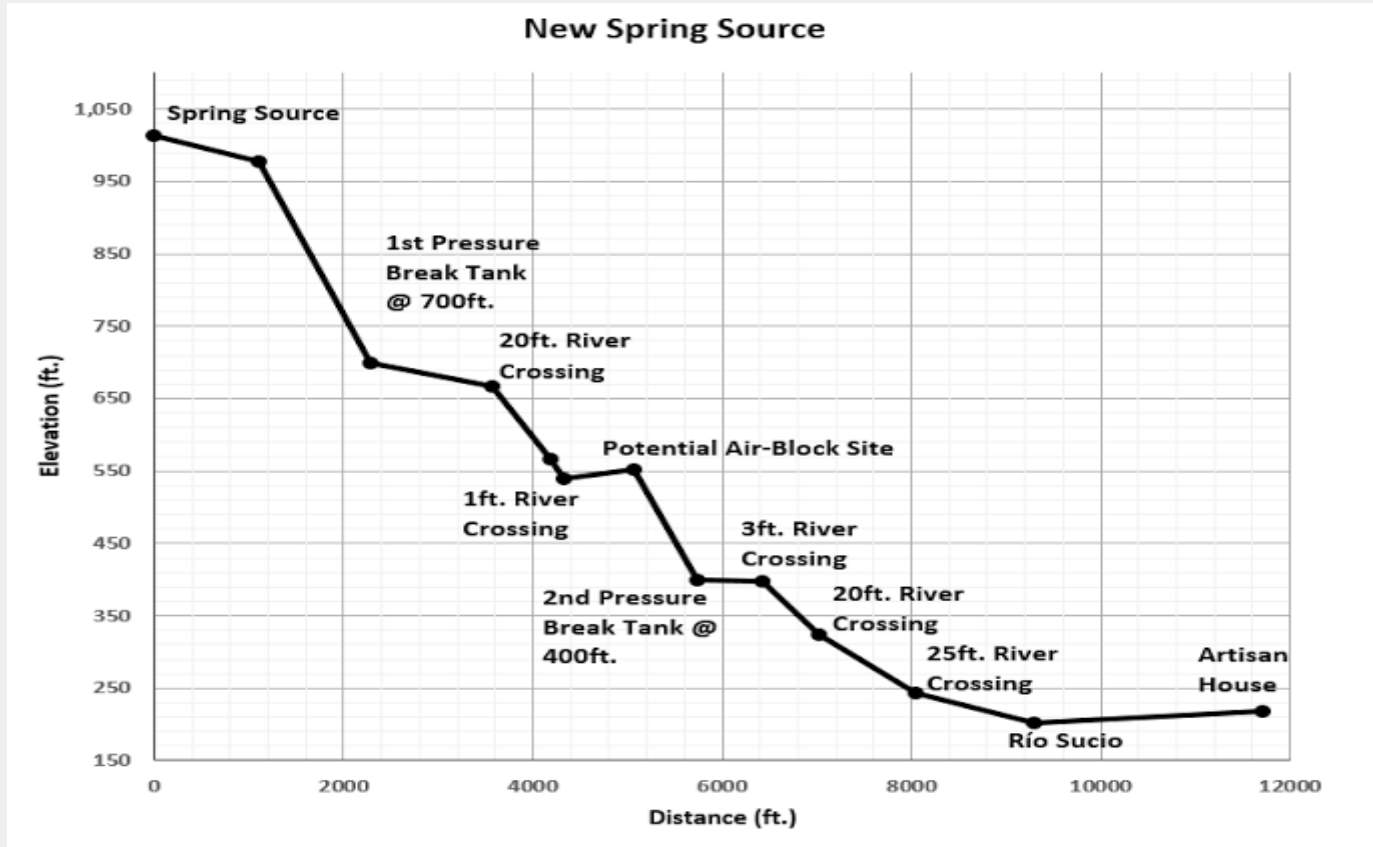
- Garmin GPS
- Nikon Forestry Pro®
- Abney Level & Tape



Community Overview



New Spring Source Profile



Water Quality



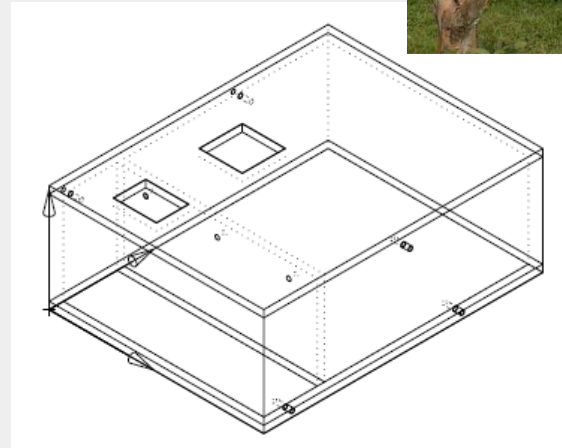
Water Committee

- Monthly meetings
- Overseen by Peace Corps volunteers
- In process of becoming organized



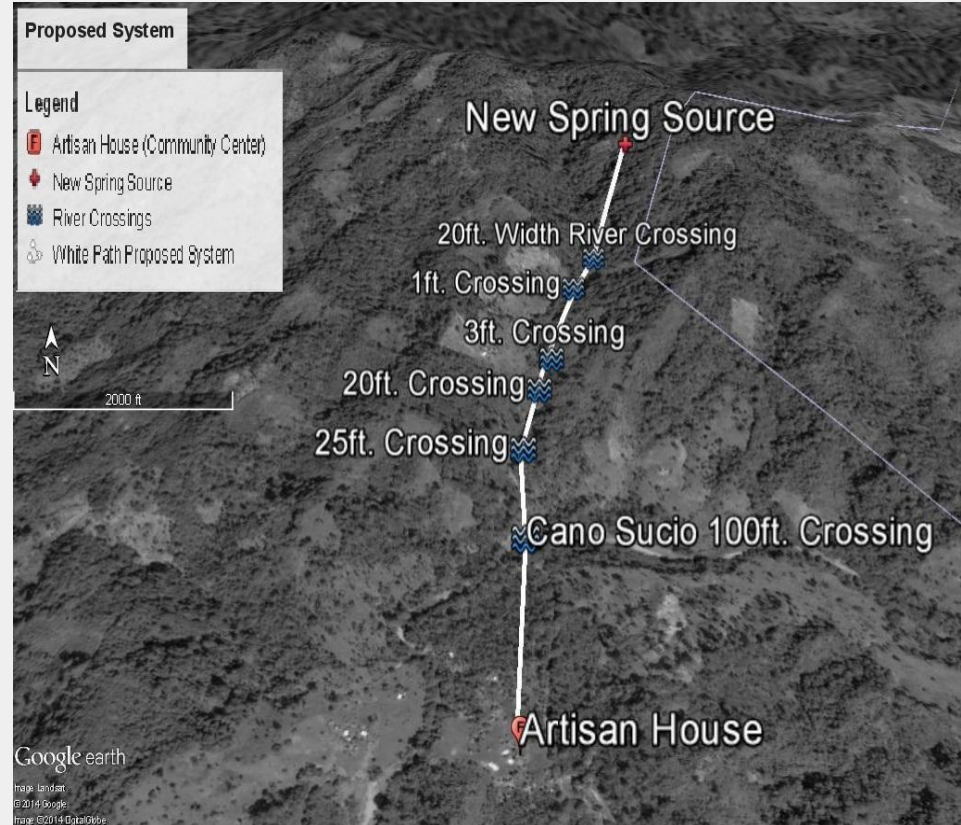
Final Design-Current System

- A new reinforced concrete water storage tank
 - 13' x 10' x 5' Dimension
(Width x Length x Height)
 - 4" thick wall
 - Separated into two chambers
 - Moved to higher elevation
- Include cut-off valves



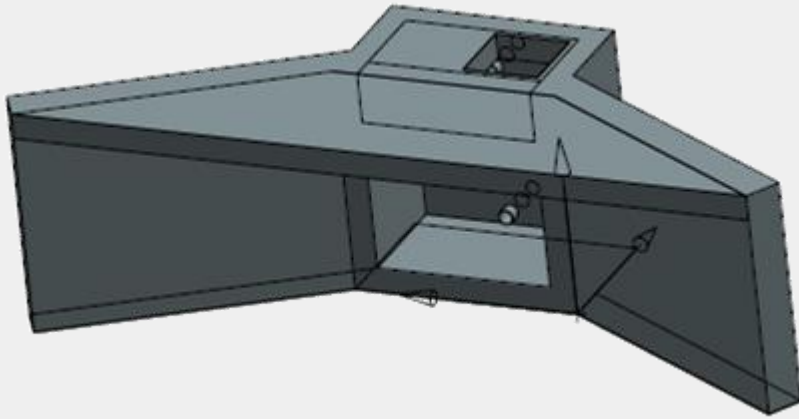
Final Design-Proposed System

- 2" 160 psi 26 SDR PVC piping
- Spring Box
- Pressure Break Tanks
- Cable Tie Crossing
- Water Tank and Platform
- EPAnet



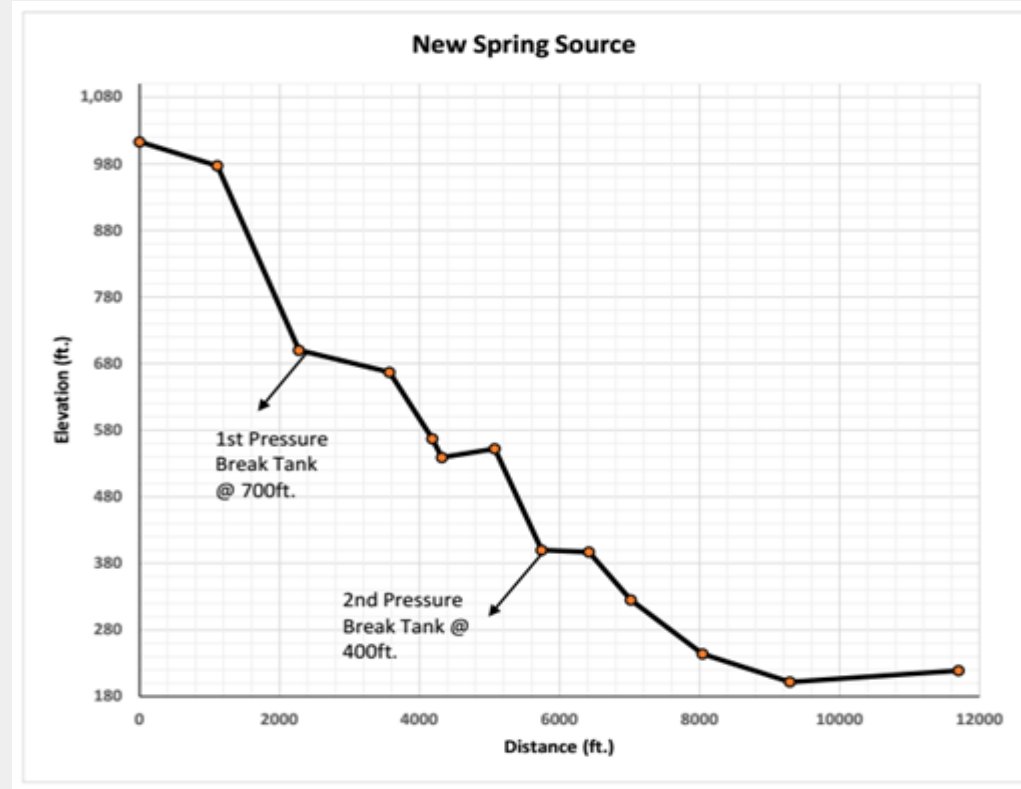
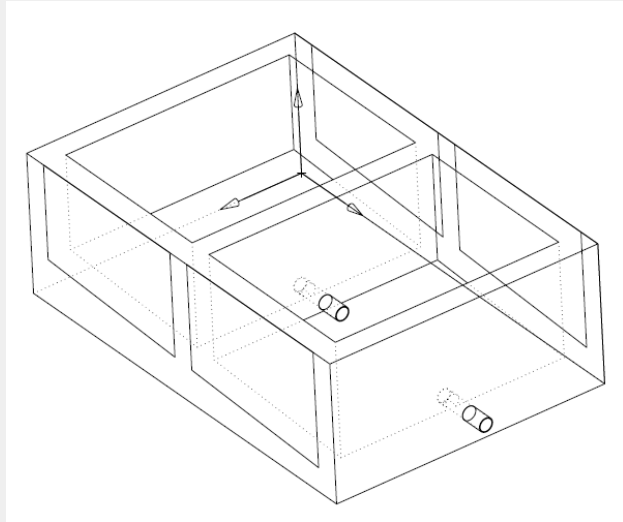
Final Design-Spring Box

- Cover the new spring source to prevent debris and contaminants
- No in-system treatment



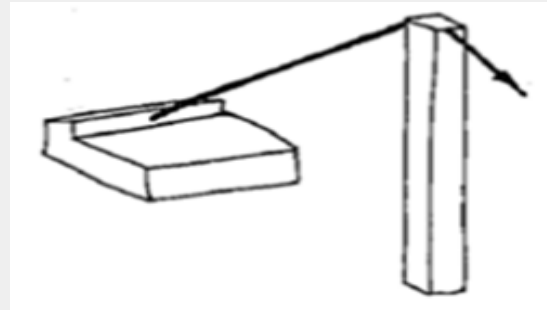
Final Design-Pressure Break Tanks

- 700-foot elevation change
- Two masonry tanks
- Upper and Lower Chamber
- Outlet pipe



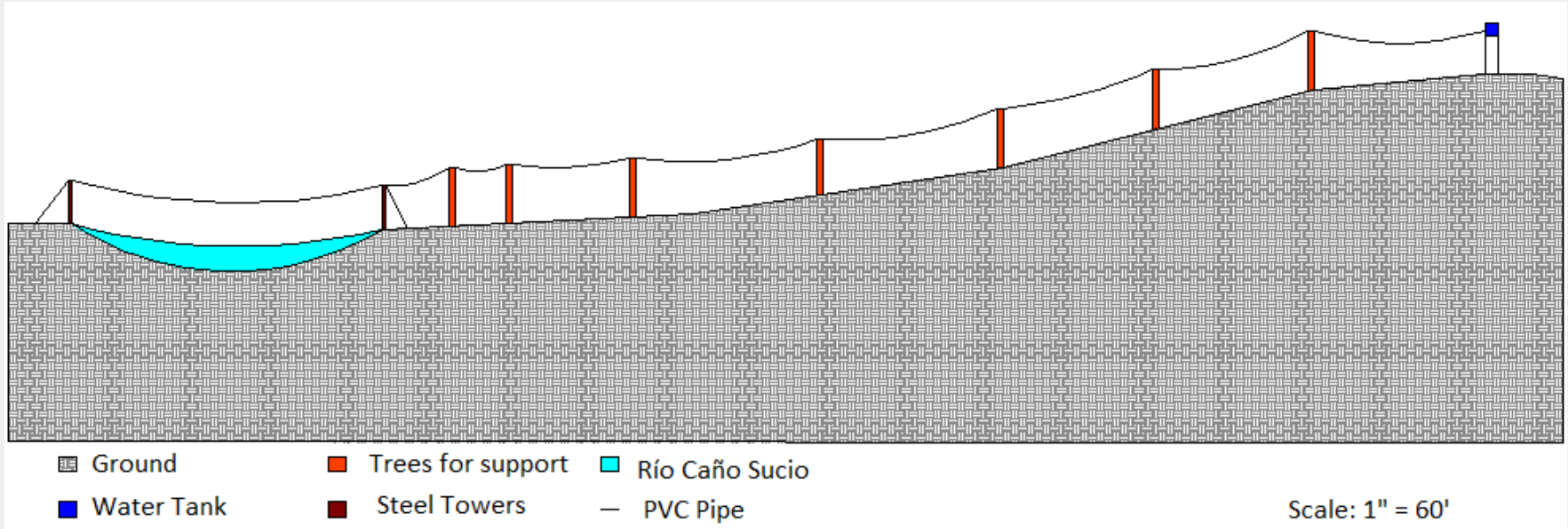
Final Design-Cable Tie Crossing

- 92-foot river crossing at Río Caño Sucio
 - Steel tower and anchor design



Final Design-Cable Tie Crossing

- Elevated piping to water tank

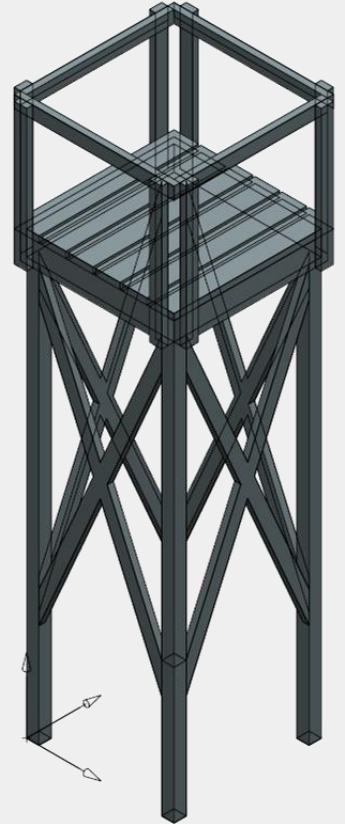


Final Design-Water Tank & Platform

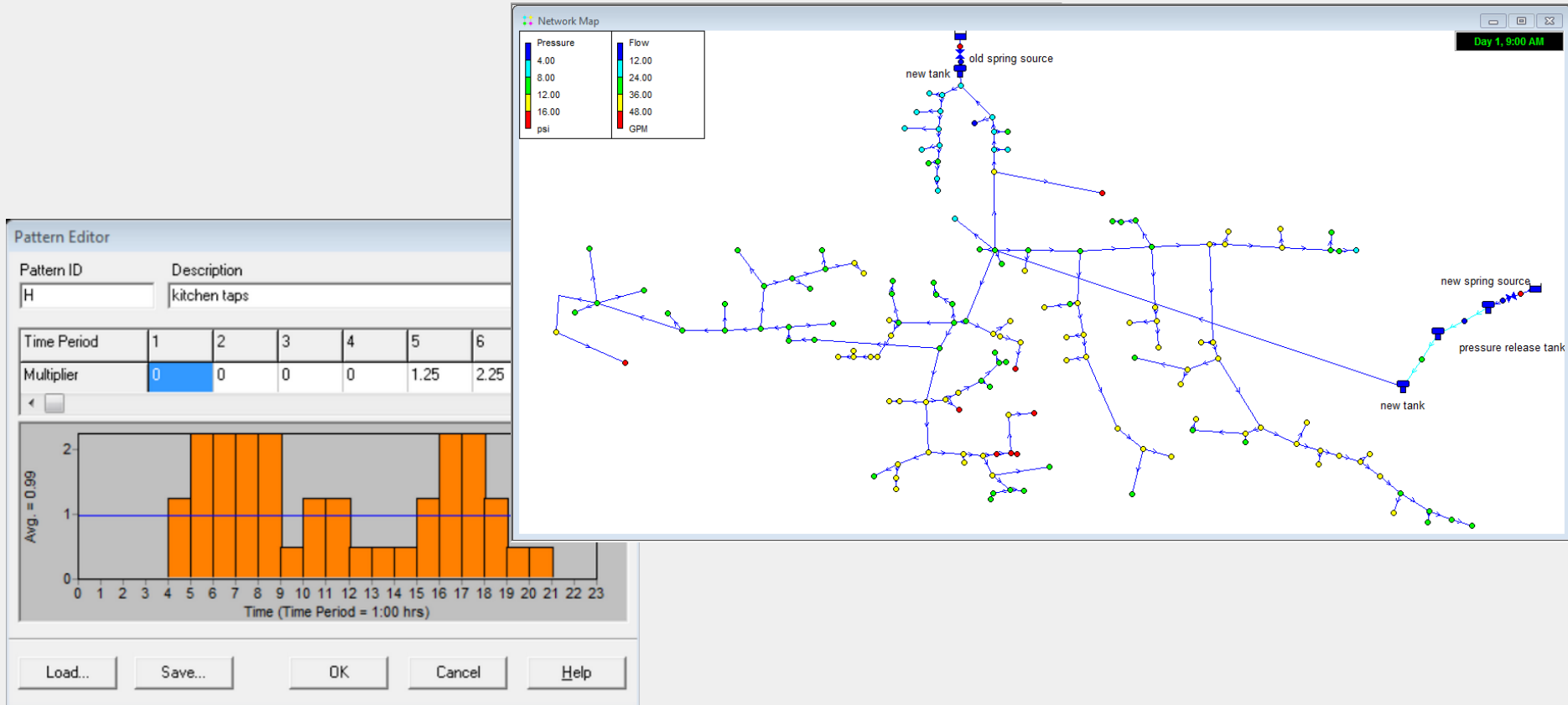
- 600-gallon plastic water tank
- Same elevation as the tank in current system
- Elevated 12-feet
- Tropical Wood for the Elevated Wooden Platform



<http://www.plastic-mart.com/product/8581/600-gallon-enduraplas-vertical-water-tank>



Final Design-EPAnet

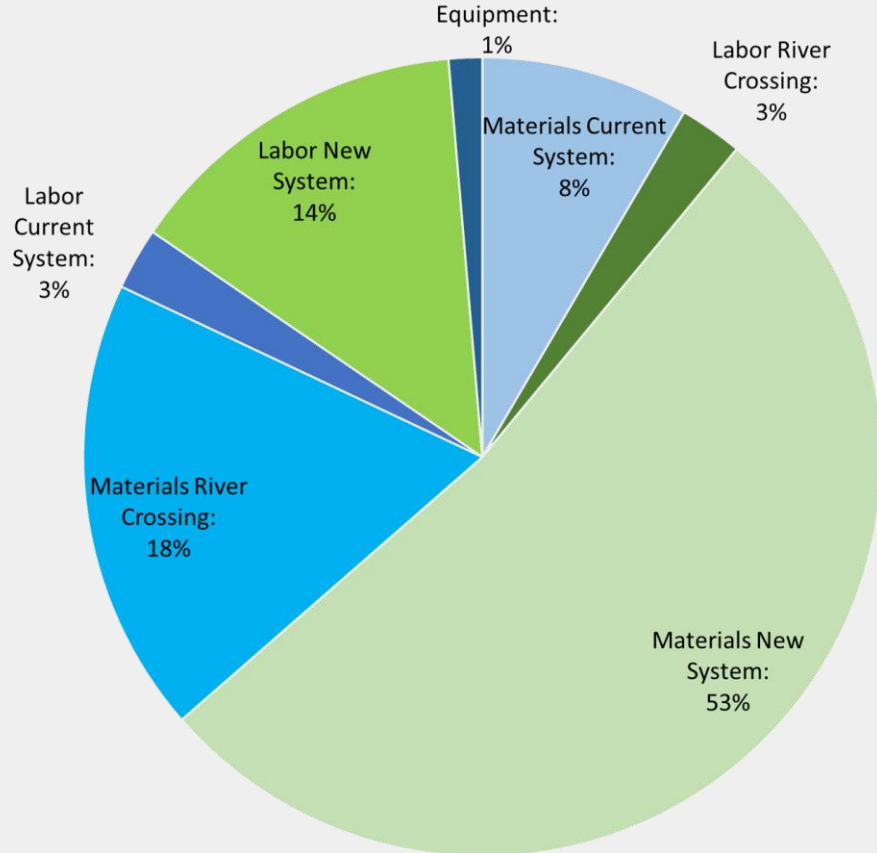


Construction/Maintenance

A construction and maintenance manual is being provided to the PCVs



Cost Estimate



Total Cost with Labor:
~\$9,800

Total Cost without Labor:
~\$8,000

Schedule

- **52 days spread over 5.5 months**
- **Current System Rehabilitation**
 - New tank 6 days
 - Cut-off valves 3 days
- **New System Construction**
 - Spring box 7 days
 - Pressure break tank 5 days
 - River crossing 8 days
 - Platform 10 days
 - Piping 9 days



Conclusion

- Community
- Proposed Design
 - Current system
 - New system
- Cost Estimate
- Schedule



Acknowledgments

- Dr. David Watkins
- Mr. Mike Drewyor
- Jordan and Sarah Varble
- Photos taken by Alyssa Smith, Kelli Whelan, and Sarah Varble

