Water Distribution System Design: La Peñita, Panamá

**Project Location**
- Located in Eastern Panama along the Chucunaque River

**Project Background**
- La Peñita is home to 177 residents and a substantial refugee population. The government provides the refugees with water, so the proposed design accounts for La Peñita community member water usage only.
- Rainwater and bottled water are the community members’ current drinking water sources.
- A partial water distribution system has been constructed in La Peñita. Components of the existing partial system are incorporated into the proposed design, reducing project cost and duration.

**Design Concept**
- Community members will perform the majority of the labor
- Expected project duration: 18 weeks

**Design Components**

- **Intake Structure:** The intake structure is located in the river. Filter pack in the wet well will ensure low turbidity of the water being pumped.

- **Water Treatment:** Water is filtered and chlorinated to further reduce turbidity and eliminate the coliforms and *E. coli* present in the untreated river water. The filter and chlorinator are housed in concrete service boxes for protection.

- **Water Storage:** (2) 1,000 gallon tanks store the treated water atop an existing tank platform. A mono-pitched roof shades the tanks while maintaining adequate clearance for tank maintenance. The platform elevates the tanks to the highest point in the community, so the distribution network is gravity-fed from the water storage tanks out to each receiving location.

**Hydraulic Model**
- **Distribution Network:** 2-inch PVC trunk lines and ½-inch PVC branch lines distribute water directly to community member homes, the school, police station, clinic, bank, and churches. Tap pressures at the receiving locations range from 4 psi to 15 psi.

A 20-year design life was considered for the system. The system will sustain the 20-year La Peñita population of 263 residents and the corresponding 20-year system demand of 5,500 gallons of water per day.

**Construction Schedule and Cost Estimate**

- **Cost Breakdown:**
  - **Labor:** $9,120
  - **Materials:** $1,080
  - **Trunk Line:** $1,980
  - **Branch Line:** $1,500
  - **Task Roof:** $2,272
  - **Metering:** $4,912

  **Total Estimated Cost:** $22,200

**Conclusion**
- KSG WaterWays has designed a sustainable and economically feasible water distribution system for the La Peñita, Panamá community.
- Next Steps:
  - Send report to project partners
  - Implementation