

Kapanga Water Works
Status Report—November 2023

Project: Provide clean water to the village of Musumba.

Start date: 2012

Status of water supply at start of project: Gravity fed spring 12 kilometers from village installed in 1986 by USAID. Unreliable flow during dry season and because of many pipe failures. Two elevated tanks for storage—120,000 liters. Both storage tanks were leaking badly and need repair. USAID provided 20 taps in the village. The villagers have added more than 100 taps. Many taps were non-functioning and there were several breaks in the distribution lines. When the spring was flowing the villagers received water a maximum of 2 hours per day.

KWW Project Objectives:

1. Drill two deep wells.
2. Install high-flow well pumps.
3. Provide electricity to operate system.
4. Provide 500,000 liters of additional storage.
5. Boost the flow to reach the edges of the village.
6. Improve distribution.
7. Make the water system community operated and self-sustainable.

Progress 2012-2022:

1. Two wells were drilled and cased to 75 meters. Water was reached at 25 meters. (2013)
2. The first pump was installed. Outflow set at 450 liters/minute. (2015)
3. ELKAP came online to provide electrical power. (2016)
4. Storage tank was erected. (2016)
5. Booster pumps installed. (2016)
6. No work on the distribution. Repair of some taps and supply lines.
7. Little progress in getting community support.

Team trip report October 18—November 4, 2023. Team Members: John Schwarting, Team Leader; Cyrille Defeu, Engineer; Britt Quisenberry, Technician; Rukang Chikomb, facilitator. (air fare: \$6,500) Ten Congolese laborers were hired at 15,000cf per day plus 5,000cf for a daily meal. Gaston was our pilot in the Wings of the Morning Cessna caravan. (\$12,000)

Trip objectives:

1. Replace liner in the 500,000-liter storage tank. The original liner in the tank had begun to leak at the base. A new liner was purchased from Balmoral Tanks:

- a. Purchase price: \$11,500
 - b. Air freight: \$4,400
 - c. Customs in Lubumbashi: \$7,000
 - d. Transport to Musumba: \$1,500.
2. Prep second well for pump installation. In previous visit the well appeared to have a blockage at about 22 meters. Pipes and supplies needed to blow the well, \$1,000.

Trip results:

1. The new liner was successfully installed, and the tank was filled. The top of the tank was removed along with one side panel. The liner was placed in the tank through the open side panel. The old liner was removed at the first ring. The rest of the old liner was left in place. A rounded mortar curb was placed between the tank base and the tank edge. Wall and base padding were placed one panel up on the tank wall. The liner was unrolled and hoisted to the top by ropes stretched along the top edge of the tank. The ropes were protected by PVC pipe placed on the top edge. Once raised the liner was bolted into place. The top of the tank was reinstalled, and the exit port was cut and sealed.
2. An attempt was made to blow mud and debris from well #2. A two-inch steel pipe was prepared and an A-frame lifting device was provided by Fr. Jaak. The pipes were lowered using clamps and a chain hoist. The pipes broke through the blockage. Water was detected at 25 meters. Unfortunately, one of the holding clamps came loose and several joints of pipe were lost down the well. These will have to be removed during the next trip.
3. Britt discovered that the pipes in the booster pump manifold were bulging and appeared to be weakened. Out of caution the booster pumps were shut down. The booster system will not be operated until we return, and the manifold can be replaced. The water is still gravity fed to the village.
4. The large square tank was leaking badly and is to be repaired by Fr Jaak.
5. Upon arrival the team discovered that the well pump was not working. Inquiring among the workers no one would say why. The team investigated and discovered that the EMP lightning module has blown. Someone admitted that there had been a lightning strike 4 days earlier but the situation was not reported to ELKAP. There were replacements on site, but repairs had not been made. Once reported, ELKAP replaced the faulty blown EMP module. Concerned that the people in charge of the water system were not responsible. Consequently, the village was without water for 4 days for no good reason.
6. During an interview with site people, it was revealed that the pump had been turned off during the dry season because they had seen a drop in the water from the spring source and decided that the well was dry also. After further examination it was revealed that the well never went dry.

7. The team determined that proper management was not being exercised. The guard was replaced, and a technical manager was placed under contract to operate the supply side of the water system. (\$300/month plus \$1,400 for motorcycle) He is tasked with supplying water to the village 12 hours per day. He is required to provide a monthly report before contract payments. The management and maintenance of the water distribution is the responsibility of the Water Committee.
8. While in Musumba the team contracted with ELKAP to install electrical wiring in the Methodist Dormitory. (\$1,100). They will now have light for after-hours study hall.
9. The foundation for a security fence around the water compound was finished. Dr Faby will send an estimate of the cost for metal railing.
10. The team had scheduled a meeting with the Providence Governor to discuss possible governmental support. The team left Musumba 2 days early to facilitate the meeting. After waiting 5 hours the Governor was a no-show. National elections are scheduled for December 2023 so there might be a change in leadership next year.
11. A 2024 trip is scheduled for September 27-October 12.