

Kiruru WaSH Project - GG#1639013 - Report to Rotary Clubs & Supporters

Dear Fellow Rotarians and project supporters,

First, thank you again for your support and partnership in this great work in Kiruru, Mwangi Tanzania. Things have been busy, then sometimes stop-n-go, with this WaSH (Water Sanitation & Hygiene) global grant project. Please accept our apologies for not sending a report sooner.

Executive Summary:

This project idea was started with a Wasrag & TRF PEP Pilot needs analysis in 2013. Once the parties scoped out the project for Kiruru, we began planning in earnest in 2015. After the Rotary Foundation funds arrived on January 2017 we began implementation. Today here is the status:

- *Water:* After gathering best available soils and borehole info, our contractor drilled a test borehole which provided some water at 120 meters, but not enough for the planned solar power. We are gathering more technical data, hydrogeology opinions, cost for AC power, to decide whether to test and use that borehole, drill another, or possibly share a borehole with a nearby vocational tech school. Each has advantages and issues.
- *Sanitation:* Local village people (including 2 women) have been trained as artisans to construct two simple but improved toilet types, and an ecosan (UDDT) toilet. They are, or will soon be, selling these to villagers at cost plus about \$100 as their compensation. Those who cannot afford to buy have been requested to save the down payment, and the microloan program is expected to start in a month or two. When their downpayment is deposited, they will qualify for a loan; and the artisan will make the toilet for them.
- *Training:* The District of Mwangi officials have been briefed, and in the future will have discussions with EEPSCO on how their capacity to do and manage WaSH projects can be improved. The school WaSH program is not yet started, but CLTS training has occurred in the village of Kiruru, so they are much more interested in avoiding open defecation and purchasing and using toilets than before.
- *Financial & Budget:* About \$45,000 USD club funds were received directly into the separate GG bank account in Seaside, OR, USA. TRF wired the remaining \$181,465 in January 2017. As provided in the MOUs with the two cooperating NGOs: EEPSCO and Water Mission, initial deposits were sent. An accounting for drilling costs compared to the budgeted amount, is due from Water Mission and expected soon - this will tell us how much we have left for a possible 2nd borehole effort or implementation of AC power (and if we may need to use some of the planned contingency).
- *Timeline:*
 - Our timeline for water system preparation is this: we would like to have the results of a hydrologist to find a possible 2nd borehole location in July, the results by August, and (if favorable) the trenching, land preparation, construction and water system installed by October 2017. Sometime in the Fall, plentiful safe water would

be flowing to the multiple domestic taps and animal drinking trough, for the first time in many years.

- Toilet construction has commenced, and further training will provide more options. Initial loans to families who need it is planned in July or August, or as soon after as they have made their down payment deposits and formed solidarity groups, to assure loan repayment.
- WaSH in Schools training will probably occur in Sept or Oct of 2017.

The more detailed report:

Scope & Numbers. As our GG application indicates ([link here](#)), there are about 2100 people living in 347 homes in Kiruru. The club funds total \$81,578 USD, TRF Global Grant is \$99,167 USD and project value is \$239,123 USD.

Water Aspects.

The old **water system**, probably from the 1970's when "free water" was believed to be feasible, came from springs in the hills and was piped to many areas in Kiruru, and some homes. The springs dried up, the system was not maintained well, and has basically been abandoned.

A new water system was needed, a simple one that could be maintained by the village. It will consist of several domestic taps, with tap operators who act like mini-entrepreneurs, buying and reselling water at rates fixed by the community, and providing central records. All this will be trained and organized by Water Mission, with community meetings also attended by the host club Rotarians, district water engineer, and other stakeholders. Sensors will relay actual usage at each tap, and the central treatment equipment, to a central website which we can monitor.

Soil studies and tests were done to find a good borehole location. An MOU with the landowner was prepared and signed, then we drilled the first borehole. Alas the amount of water it yields does not meet the expectations that we need for the project. We are currently working with Water Mission (WM), the local government district, drilling contractors and a hydrogeologist to gather information on all boreholes in the area. We have also provided to WM suggestions from other experts and we are currently waiting for a highly qualified, proven hydrologist to do test in the area for the location of a 2nd borehole drill. We have two other options. We can use the 1st borehole test and hook it up the the power grid allowing for it to pump 24hours a day. Our original plans was for solar power allowing for pumping only a few hours a day. Another option is there is a borehole drilled at the local school that has not been developed. We could possible work out a deal to use this borehole. Our best option would be to find our own borehole and are waiting for tests to take place.

With guidance from Water Mission, soils studies, the Pangani Water Basin and drilling experts, a test borehole was drilled in January 2017. The result was 18 liters/minute at 120 meters depth, and no water (fresh rock) at 160 meters.

In addition a pump test was conducted on the Vocational School borehole and found a yield of 26.4 liters/minute. We are looking for more like 100 liters/minute for the community. We also

conducted a pump test at a hand dug well east of the road and found the yield about 7 liters/minute.

We are now working with Water Mission, with expert advice from Wasrag and others, to carefully evaluate and decide which to do::

1. Drill a 2nd borehole test, with satellite info, rock fracture ideas and more VES studies? (VES, Vertical Electrical Soundings measure resistance of the soil, with the aim of finding water pockets with lower electrical resistance.) This will use most of our budget, and eat into the contingency funds if the well is productive.
2. Use the 1st borehole, bring in AC power to supplement the solar, so the pumps go nearly 24 hours a day? Will the village funds be able to afford and maintain that system?
3. Enter into a collaborative agreement with the nearby vocational school, presently dormant, to share their borehole? We would need to have a careful contract to prevent free or cheap water from undercutting the Kiruru WaSH committee work, what are the terms, and how would it be enforced?

Sanitation Aspects.

Our Sanitation partner EPPCO did a baseline survey ([photos here.](#)), then taught village artisans about toilets for the community to learn and adopt. So far we have three demonstration toilets already constructed toilets and one dry toilet is under construction. The construction was done by 20 artisans (with 2 being women). These trained artisans will help the community members to construct and maintain the household toilets.

On the sanitation side, about 40 homes have no toilets, and 71 of the village homes have simple open pit toilets (so-called “traditional latrines”), which are not sanitary or safe, and they allow flies to bring fecal matter to food. Another 76 household toilets are somewhat improved. About 150 toilets have some type of water flush (e.g. pour a cup in the pan). In this project are teaching the importance of toilets, training local artisans to make different styles, encouraging a local economy, and providing funding for families that cannot afford to buy them. For the first time ever in Rotary, there will be a revolving loan fund for household toilets, managed by the local microfinance institution, Mwanga Community Bank. (MOU available if you wish to read it.)

Hygiene Training.

There is poor personal hygiene in Kiruru, with little handwashing. We will have trainings on this in the nearby school, and in village gatherings - and go door to door if necessary. We also plan to monitor behaviors, to assure they change to be more hygienic and conscious of sanitizing water containers, clean food preparation, and handwashing before meals and after using toilet, tending animals, changing babies, etc.

Technology & Planning Challenges.

For those of you who have not come to rural Tanzania before, let us explain the situation. In Mwanga, the nearby large town, all the roads are dirt, electricity is on some of the day and often fails. There is virtually no internet as you know it - only mobile data, and that network is often weak, or not working altogether. We try to schedule conference calls among Rotarians and NGO partners using GoToMeeting, but schedules and technology often interfere with this.

The culture in Kiruru is generally “do today” with little planning. And it is simple, often authoritarian - not conference calls or collaboration. In this project we want to do the best that is feasible, so we have involved several parties and as Rotarians seek to coordinate them: 2 expert NGOs to assist, the local district officials are supportive and involved (health officer, water engineer, district executive), and the village leaders and influential village members. Of course we also have the partnership of our Rotary clubs, several Rotarians in Mwanga and Seaside..

Kiruru is a simple village of mostly pastoralists (animal raising families). All roads and most house floors are dirt. Most people live subsistence lives, they barter, have little real money. Average income for the breadwinner is \$1 to \$2 USD a day. There is a red dust which to the visitor seems pretty, but the wind blows and it gets everywhere, and cannot be cleaned. The climate is dry steppe - rains come two times a year, total of about 55cm or 20 inches (on Oregon coast, 100 inches)

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