

## THE 2009 INTERNATIONAL HEALTH COMMITTEE HEALTH PROJECT:

### COMPLETION OF THE WATER SYSTEM AND LATRINES IN LOS RODRIGUEZ, NICARAGUA

Frank Meriwether, December 25, 2009

On November 26, 2009 I visited the small remote village of Los Rodriguez to meet the people there and review the completed water system and latrines funded in 2009 by the WSPHA and the WSEHA International Health Committee. The organization Agua Para La Vida designed the water system, and directed the villagers in construction of latrines and in the manual labor required for installation of the water system. Further information on APLV is located on their web site [apl.org](http://apl.org), which includes a 15-minute video explaining the history and operation of this non-profit organization in the central area of Nicaragua.

Los Rodriguez is located in a remote area called the Autonomous South Atlantic Region of Nicaragua. Roads are generally few and in poor condition in this area. Numerous streams cross such roads during most months of the year. During this visit I travelled initially by four wheel drive, then by mule, then by dugout canoe, then again by mule to reach the village. The river we crossed by dugout is the Rio Tuma, which isolates this village from others. In order to provide a drinking water system to Los Rodriguez a separate source of water was required, since building a bridge for a waterline over the river from the adjacent village was not feasible. The villagers are very hard workers, living off the land as best they can with chickens, some cattle, some fish, and a few crops.

The source(s) of water for their water system is two springs located close to (and upgradient) from this community. Since there is no electrical power to this (and many other APLV project villages), the water system consists of gravity flow through PVC pipe from springs to a reservoir tank, and then by gravity from the reservoir tank to faucets located near the houses. APLV requires that villagers complete their latrines prior to initiation of water system construction, to help ensure that a more complete health environment is provided to the villagers. APLV health promoters spend time in each village before, during and after water system construction to help ensure that hygiene practices are in place and understood.

Two springs are used for the community's water supply. Flows from springs are measured during the dry season months (similar to our summer months) during the design process to establish the minimum expected spring flows, to ensure an adequate supply to the community. A 20-year growth factor and 10% leakage factor is used in these calculations, since APLV water systems are built with durable materials and a long time of service. In the case of Los Rodriguez, a future design population of 70 people is assumed. If spring flows are sufficient, APLV requires the area surrounding each spring source to be owned by the community, so that any private property owner cannot interfere with the village water supply. This area of protection around each spring is generally about two acres and is fenced to keep out cattle and people. In addition, an APLV specialist helps the community plant appropriate trees

and bushes in the protection area, to protect the spring area and provide nutrition and income to the community. In the case of Los Rodriguez, guava, cocoa and pear trees were planted around the springs.

APLV staff uses a computer program to model the flow of water from spring sources to the reservoir in each system, to determine minimum pipe diameters and to eliminate any air pockets that could limit or stop the gravity flow of water. In addition, a second computer model program is used to design the distribution system (from the reservoir to the faucets) to minimize material costs while ensuring reliable flows from faucets. The community is responsible for digging all the trenches (one meter deep) and all the manual labor in construction of the system.

During my visit I visited the concrete spring boxes constructed by APLV staff and the community at the two springs used for the Los Rodriguez water supply. Lockable access hatches allow the villagers to access and maintain the entrance and discharge pipes leading towards the reservoir. Both spring boxes were completed and in satisfactory operation. The system's reservoir is a black plastic tank in a locked reservoir house, which was also in satisfactory condition and operation. Water flows from the faucets outside of the houses were about three gallons per minute during this visit. The latrines are ventilated improved pit latrines, and were well maintained.

The community members are delighted with their water system and latrines. They report that the water is clear and clean and has a much better taste and is much easier on their stomachs than their previous supply of water, which was taken from a dug hole. This water system was completed in the summer of 2009, so it is a bit early to try to determine the health benefits of this new water system.

The community expresses great thankfulness to the WSPHA and the WSEHA International Health Committee for funding this project, and bringing them a new healthy future. The total cost for the project was \$2338. The silent auction proceeds for this project were \$1338, and an anonymous donor subsequently contributed \$1000 to fully pay for this worthwhile project. Thank you WSPHA and WSEHA!