AGUA PARA LA VIDA – NICARAGUA
RÍO BLANCO
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Drinking Water and Sanitation Project
Community of La Esperanza, Rio Blanco
Final Report

Start date: May 24, 2011
Completion date: October 2, 2011

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LIST OF ABBREVIATIONS

cm	Centimeters
cf	Coliformes fecales (Fecal Coliform Bacteria)
CAPS	Potable Water and Sanitation Committee (Comité de Agua Potable y Saneamiento)
Ø	Diameter
DN	Nominal Diameter
°	Degrees
FISE	Fondo de Inversión Social de Emergéncia (government agency)
HF	Hierro Fundido (Cast Iron)
HG	Hierro Galvanizado (Galvanized Steel)
km	Kilometer
lb	Point
LC	Línea de Conducción (Conduction Line)
l/min	Liters per minute
l/s	Liters per second
Ma	Manantial (Spring)
m	Meter
m2	Square meter
m3	Cubic meter
ml	Mililiter
MAG	Mini-aqueduct by gravity
MINED	Ministry of Education
MINSA	Ministry of Health
N/A	Not Applicable
O y M	Operation and Maintenance
PVC	Polyvinyl Chloride, a plastic used for piping
PN	Presión Nominal (nominal pressure)
qq	Quintal
RD	Red de distribución (Distribution network)
TP	Tanque Propuesto (Proposed tank)

1 - INTRODUCTION

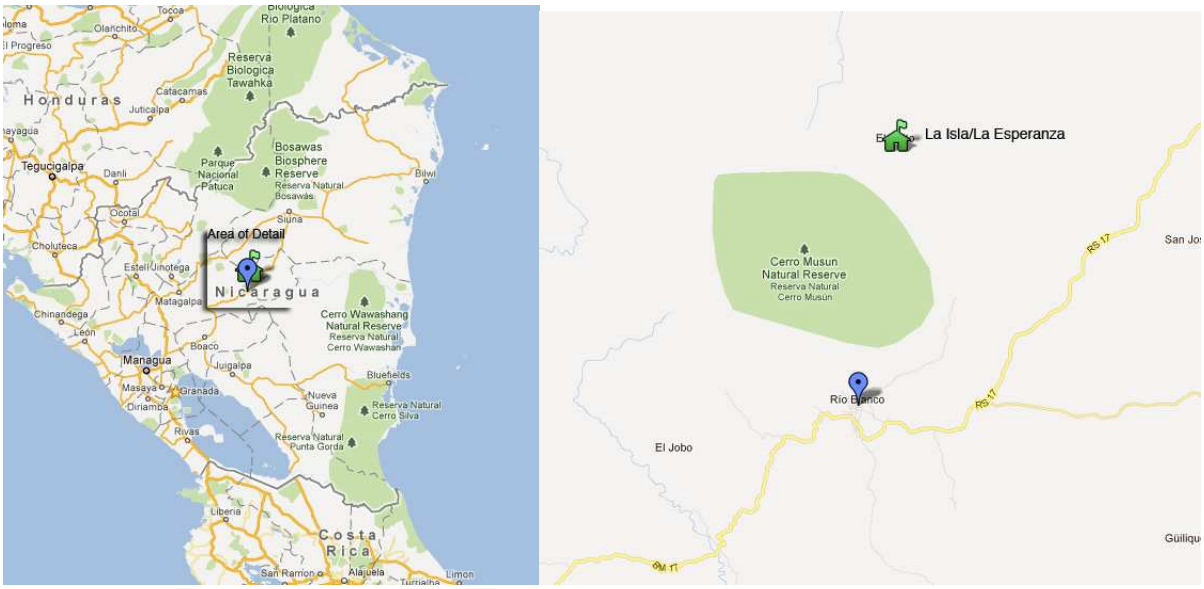
This is the final report on the Potable Water and Sanitation Project for the community of La Esperanza, executed by Agua Para La Vida from May 24 to October 2, 2011.

La Esperanza is located in the municipality of Rio Blanco, Matagalpa, Nicaragua.

This Project was financed by the Laird Norton Family Foundation, Rural Water Ventures, Agua Para La Vida, Ayuda en Acción, the municipal government of Rio Blanco, and the community itself.

Agua Para La Vida (APLV) was responsible for the administration of the funds and the execution of the project and educational programs.

La Esperanza, with its sister community La Isla, is located in the north-east section of Nicaragua, not far from the APLV office location in the city of Rio Blanco, as illustrated in these maps.



1.1 Review of the situation before the execution of the project

This review explains the situation before the Project.

This community consists of 25 families and a population of 142 inhabitants.

In every APLV Project, the first step is an informal letter from the community, the “solicitud”. This letter explains the community’s motivation, need, and basic situation.

The families of the community were previously getting their water from these sources:

Sources of supply	Families
Systems of hoses	35%
Hand-dug wells	65%

During the summer months (February, March, and April), the water from the hose systems dried up. During that period, the families had to look for and haul water from much further away. Typically the women and children hauled the water.

As in many communities, both health and community environmental conditions were unfavorable. It was necessary to develop a complete program of health education alongside the potable water and sanitation project in order to have a real impact in reducing the incidence of water-borne diseases.

Sanitation
According to the preliminary survey of latrines, only 3 latrines were found to be in good condition, so the total percentage of families with adequate sanitation was less than 10%.

Local Hygiene Conditions
As in many communities, the health and local hygiene (animal management, solid waste and wastewater disposal, etc.) are paramount. The families were not properly removing trash, or covering water containers. In addition, they had domestic animals running loose contaminating the living areas. In order to have a major effect in diminishing water-borne diseases, it was important to develop an education program in preventive health alongside the potable water and sanitation project.

1.2 Beneficiaries of the Project

Water

24 water faucet installations were constructed, and one remains to be constructed, as the family has not completed its home, and according to APLV policies the faucet is not installed until the home is complete.

The 25 faucets represent **142 direct beneficiaries;** each of the beneficiary families completed their days of work.

Given the current population of 142, with an annual population growth rate of 3%, the community will have 257 inhabitants in 20 years, and the project is designed to sustain that level of growth through the expected 20-year lifespan of the project.

2 - COMMUNITY EMPOWERMENT

Community organization and the development of local capabilities is a key part of the success of any community project. This community organization depends on the preparation of the project, its development, and future sustainability.

As a result, the social work starts well before the start of the physical implementation, since we recognize that community education, ownership and management are the keys to the sustainability of the project.

2.1 Activities Completed

Period	Activities
April 2010	• First contacts with the community, to assess the need for the project and its social feasibility. • Presentation of the work policies of APLV and their acceptance by the community.
January 2011	• Visit with the community for the election of the Potable Water and Sanitation Committee (Comité de Agua Potable y Saneamiento, or *CAPS*) • Election of the CAPS
January 2011 July 2010	• Negotiations with the owners of the spring (the source) and the land where the tank was to be placed. • Negotiations to obtain easements for the piping of the system.
February 2011 July 2011	• Inter-institutional agreements signed by the municipality of Rio Blanco and APLV. • Work and labor/organizational agreements completed and signed by every member of the community and APLV.
January 2011	• Creation of a group to organize the work during the execution of the project. • Agreements with the community to ensure the provision of food and lodging for the visiting APLV staff and warehousing for materials.
February 2011	• Community assemblies for training, planning, and decision-making.
April 2011	• Administrative training for the CAPS committee.
April/May 2011	• Technical training for the CAPS committee.

2.2 Results Achieved

2.2.1 Inter-institutional Agreements

An agreement with the MINSA (Ministerio de Salud, the Nicaraguan Ministry of Health) created a link between the agency and the community, especially with the health promoters in the CAPS. This long-term agreement allows health promoters to receive the support of MINSA in receiving future trainings, water quality analysis, and to obtain chlorine with which to disinfect the system.

An agreement with the Nicaraguan Ministry of Education (MINED) permits the APLV health promoters to give talks and trainings at schools and community assemblies. It also permits them to explain and promote the development activities of APLV in schools and with the cooperation of teachers in the schools.

The agreement with the municipal government of Rio Blanco was an excellent coordination providing the following benefits: a sign, water meters and water meter enclosures, and tools.

2.2.2 Work with the Community

The community of La Esperanza requested this project. They explained the great necessity of having good water as they were consuming contaminated water. They were clear in their interest in doing the work to create the system.

The community was active during the entire execution of this project. The families were punctual in completing their assigned tasks; the families completed an average of 51 days of work each.

There was a period of discouragement for some families when they faced the extremely heavy work that had to be performed in trench excavation, carrying materials, etc. Assemblies and home visits by the social promoter and committee members resolved this problem.

Women were active in the project through:

1. Preparation of food for APLV staff
2. Transporting pipes to their project location
3. Filling in the trenches on top of the pipes
4. Collecting and cleaning the stones used in the project.
5. Active participation in the various trainings.

2.2.3 Structure and Functioning of the Water Committee (CAPS)

During the preliminary phase of the project potential leaders for the work committee were identified.

At the conclusion of the La Esperanza sector project, the work committee dissolved and some of the distinguished members became part of the CAPS (the ongoing Committee for Potable Water and Sanitation).

Since the La Esperanza project is an additional zone of the La Isla system, both La Isla and La Esperanza communities decided to form single CAPS for management of the funds and maintenance.

The resultant CAPS committee has the following members:

Roles	Person In Charge	Social Position, etc.
Coordinator	Margarito Cuba (La Isla)	Laborer
Vice-Coordinator	Alfonso Alvarado (La Isla)	Merchant
Secretary	Elvin Arauz (La Isla)	Small farmer
Treasurer	Nodorlando Arauz (La Isla)	Farmer
Responsible for Health	Jasmina González (La Isla)	Student
Member of the Health Commission	Socorro Aguilar (La Esperanza)	Housewife
Responsible for Reforestation	Severino Rosales (La Esperanza)	Small farmer
Member of the Commission for Reforestation	Rosario Raudez (La Esperanza)	Small farmer
Responsible for Operation and Maintenance	Joaquín Mendoza (La Esperanza)	Small Farmer
O&M Committee	Seferino Ramírez (La Isla)	Laborer
O&M Committee	Denis Arauz (La Isla)	Driver

2.2.4 Administrative Trainings for the CAPS

These administrative topics were delivered in workshops:

Period	Administrative Training
January 13 and 17, 2011	Community Organization
February 2011	What is a Leader?
	Tasks and Functions of the Potable Water and Sanitation Committee (CAPS)
April 2011	Administration and Fee Collection
	Maintenance of the System
May 2011	Discussion and approval of an internal set of rules
	Meter Reading

The administration workshops had a participation rate of 98%.

2.2.5 Technical workshops for the CAPS

The following topics, theoretical and practical, were taught to the CAPS:

Period	Theoretical Topics
February 2011	Components of a gravity-flow water system.
February 2011	Function of each of the components of a water system
February 2011	What are sanitary materials, pipes under pressure, drainage pipes, diameters, other accessories?
April 2011	What are flow reducers, their role and importance in the distribution system?
April del 2011	Problems that result in the distribution network with flow reducers when they're capped, how to resolve them.
April 4, 2011	Identification of problems in rural water systems and meter reading. (Training by the follow-up team)
May 11, 2011	Meter reading, meter reading practice, and training in filling out the water bill with the consumption of each family (done by the follow-up team).

Period	Practical Topics
February 2011	How to make a patch for repair
February 2011	How much glue should be applied to the pipe.
February 2011	Identification of pipe parts and other accessories
April 2011	Installation of automatic air-removal valves.
May 2011	Installation of meters and flow reducers
May 2011	Measuring water flow
12 May 2011	Meter reading and how to determine charges for water consumed
August 11, 2011	Follow-up to assess management of water billing practices.

The workshops developed by the technical group were focused on the development of the committee members on the technical aspects of the water system. The committee achieved an attendance rate of 90%.

In the practical part each member was trained according to his or her responsibilities. Both theoretical and practical trainings were delivered; the goal was that the committee would be capable of doing any type of repair needed in the system.

The APLV water technician training the CAPS

Taking into account gender equality in the project, the women participated actively during the physical execution of the project and especially in the trainings, in accordance with the policies of APLV.

All showed interest in learning, were attentive to the topics of training, and expressed satisfaction with what they learned.

We believe that the committee is prepared to maintain and operate the water system and that through the trainings and hands-on experience they have absorbed all the topics of study.

2.2.6 Agreements made

a) Spring (Water Source)

The sector of La Esperanza was connected to the tank of La Isla, which already had legal rights to the land around its water source.

b) Tank

Mr. Eulalio Eulalio Ramírez Ramírez donated the space (12 meters on each side) for the tank, with the agreement signed on January 18, 2011.

c) Easements for passage of the pipeline

Easement agreements were made with the owners of 12 parcels. The majority are beneficiaries of the project, so there was no real issue with this.

2.2.7 Future administration of the system

2.2.7.1 General organization and maintenance of the system

The CAPS has been organized and trained for the proper use, operation and maintenance of the water system. It is certified by the municipal council and recognized by the local authorities of the municipality, who will support them as necessary to enforce the Internal Rules of the community. In case it is necessary, the committee has the backing of the Police, the municipality, and the local judge of the municipality.

The CAPS is responsible for completion of these maintenance tasks:

- Operate, inspect, and administer the water system.
- Inspect the protected area around the water source, making sure that fires and deforestation are not an issue there.
- Clean connection boxes, tanks, and other places that require continuous maintenance.
- Perform preventive maintenance on all the parts of the system.
- Read the water meters every month and update the water bills for each family.
- Administer the maintenance fund responsibly
- Arrange informative assemblies and action plans to develop the water system.
- Coordination activities and develop social assessments in order to improve the sustainability of the project.
- Develop technical assessment and procedures necessary to provide the right to water for new families and households.

The operation and maintenance trainings involve the CAPS of the three communities. The objective of this method was to permit the various community members to know each other better and demonstrate the importance of coordination and mutual support among them.

2.2.7.2 Rates and Financial Control

The rate was defined according to the requirements for system maintenance. It also took into account the economic status of the community. The base rate is C$35/month (about US$1.50), and provides a right to 13 cubic meters of water (about 70 liters or 19 US gallons per person per day). If a family consumes more than this amount monthly, they pay an incremental amount of C$ 5 (about US$0.22) for each cubic meter of water consumed.

The fees are collected monthly by two members of the CAPS and provide for future maintenance expenses (purchase of accessories, chlorine for cleaning the tank, etc.) Financial controls are provided by means of a ledger where all income and expenditures are recorded.

The CAPS is currently working on opening a bank account. The recent law regarding CAPS committees recognizes these entities in Nicaragua, and they will eventually be able to open an account in the name of the CAPS. Nevertheless, the paperwork required from the municipal government slows things quite a lot, and they have been directed to open an interim account until that can happen.

In order to get a new connection to the system a family that did not participate in the construction must pay to the CAPS treasury US$345 or the equivalent in Nicaraguan currency at the official exchange rate. In addition they must pay for the purchase of pipe, accessories, and faucets.

The monthly fee and the requirement of paying for a new connection are two key requirements to maintain the finances of the structure and guarantee the sustainability of the system.

3 - GRAVITY-FLOW WATER SYSTEM

3.1 Technical Summary

The following tables contain a summary of the components of the system and the piping used.

Stage	Concept	Units	Expected	Executed	Executed (%)
1	Intake/Catchment	Each	0	0	0
2	Conduction line	m	1196	1208	101%
3	Storage tank	Each	1	1	100%
4	Distribution network, sector 1	m	6454	5821	90.2%
5	Distribution network, sector 2	m	2290	2226	97%
6	Family water faucets	each	29	25	86%
7	Faucet drainages	Each	348	300	86%
8	Water meters	Each	29	24	86%
9	Automatic air-removing valves	Each	4	1	25%

Piping	Line (m)	Tank (m)	Network (m)	Faucets (m)	Drainage (m)	Total (m)	Pipe (#)
Pipes ø 2" SDR 41	-	18			288	306	51
Pipes ø 11/2" SDR 32.5	66	-	89.7			155.7	26
Pipes ø 11/4 " SDR -26	1128	-	105.2			1233.2	206
Pipes ø 1 " SDR -26			340.9	-	-	340.9	57
Pipes ø 3/4 "SDR 17			1626.6	-	-	1626.6	272
Pipes ø 1/2" SDR - 13.5			5885.3	26.5		5911.8	986
Total	**1194**	**18**	**8047.7**	**26.5**	**288**	**9574.2**	**1598**

The project completed ahead of schedule, and all of the projected components were completed.

3.2 System Description

Intake

This project did not require an intake because it is an additional sector of the La Isla project, using the intake from that project.

Conduction Line

The conduction line is 1196 meters, connected with 1 ¼" and 1 ½" PVC SDR 26. Four automatic air-removing valves were planned, but only one was necessary.

Storage Tank

The tank has a volume of 6 cubic meters. First the slab was laid, and then the walls were constructed using a wooden framework. The construction is of concrete, to provide better resistance and avoid leaks. The components of the tank are an overflow, a ventilation tube, a bypass, and a valve box to protect the input and output tubes and control access to the valves.

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Bypass

The tank has a bypass that allows water to continue to flow to the community when the tank is being cleaned or during other times of maintenance. This is protected with a concrete box with a metal top, and connects the intake and outflow of the tank.

Distribution Network

The network was designed with the software package Neatwork 3.26. Trenches of one meter in depth were dug, in order to provide maximum security for the piping and avoid future maintenance costs to the community.

There are two sectors of the distribution network. Sector 1 is 5821 meters long and sector 2 is 2226 meters. Sector 2 is connected to the distribution network of the La Isla project. The piping in the distribution network is from 1 ½" SDR 32.5 to ½" SDR 13.5.

Underground crossings in the distribution system were built with stones, sand, gravel and cement to a depth of 0.8m. There were 7 subterranean crossings, each 12 meters in length, protected with concrete and encased in tubing of larger diameter.

Household Water Faucets

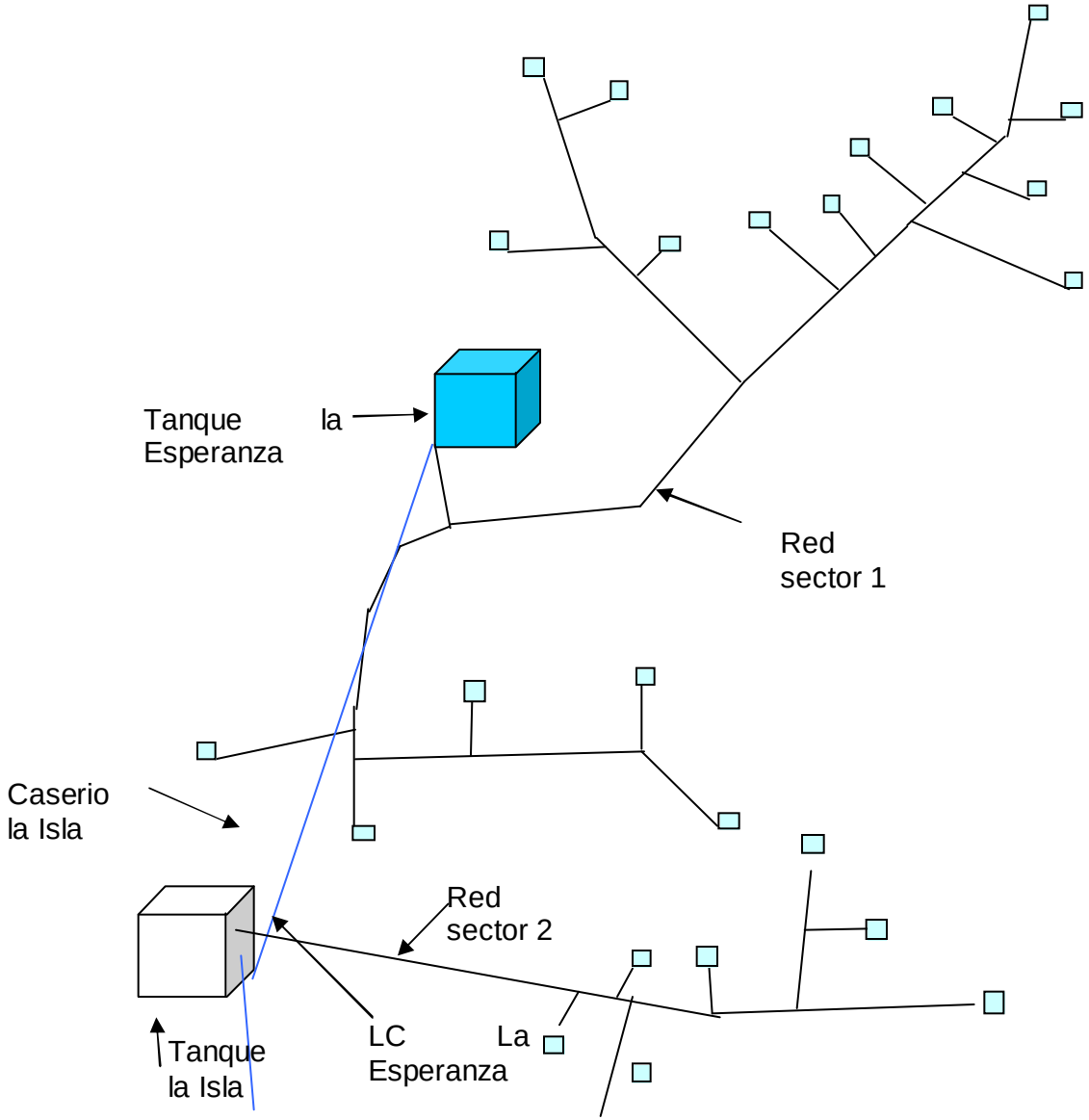
To construct the faucets for each family, a galvanized steel nipple was used to connect to the PVC piping; a steel elbow, three pieces of rebar, and a, and the faucet itself were required. To prepare the concrete, a load of gravel, five loads of sand, two 2" PVC SDR 41, and one 2" PVC drain.

Each faucet installation also included a tube for drainage of gray water, to avoid gray water puddles in the area.

Water Meters

One meter was installed for each household to provide better control of the water and avoid wastage at the faucets. The meters are protected by a concrete box to avoid damage and provide greater durability.

Sketch of the Mini-Aqueduct



3.3 Water Quality

	Date	Sample Location	Volume filtered (ml)	Number of Coliform Bacteria
BEFORE THE PROJECT	December 9, 2010	Saturnino Vargas Spring	100	24
		Antonio Vargas Spring	100	More than 50
		Eulalio Ramirez Spring	100	More than 23
AFTER THE PROJECT	October 5, 2011	Faucet water from Eulalio Ramirez family faucet	100	0
		Water from the tank	100	0
		Faucet water from Joaquin Mendoza Rayo family faucet	100	0

APLV does water analysis to determine the quality of drinking water quality before and after the project, determined by the amount of fecal coliform bacteria discovered in the samples. The results prior to the project showed a high level of contamination in the springs where families used to obtain their drinking water. The results of tests of water after the project completion show pure water due to the water project, sanitation initiatives, and health and sanitation trainings.

The community has been advised to coordinate with the MINSA office in Rio Blanco to do water quality tests ever trimester and also to obtain the chlorine required to disinfect the various parts of the system.

4 - RURAL SANITATION

4.1 Latrine Design

A key element of rural sanitation is the use and maintenance of latrines. Although people in the first world often refer to these as "outhouses", the latrine (*letrina* in Spanish) is more than just a

box over a pit. These are referred to as FISE-style VIP latrines: Ventilated, Illuminated, And Perforated. (FISE is a Nicaraguan government agency.)

Since families do the construction of the latrines themselves, the community members were trained in how to build them.

The design was for construction of latrines with a ventilated pit, semi-elevated. The semi-elevated latrine is different from the conventional latrine ("simple traditional"), because it disposes of the vertical ventilation tube. The basic parts are: pit, foundation, floor, seat area, hole cover, stand and vent pipe.

In addition, a special adapter was provided above the bowl for use by children.

The materials for each outhouse were 92 concrete blocks, 24 cans of sand, and four bags of cement.

4.2 Building the latrines

The work of building the latrines involved all of the beneficiary families. 22 latrines were constructed, financed by the NGO Ayuda en Acción.

4.3 Results achieved

Each family constructed its own latrine. With this, the beneficiaries have improved the quality of their lives, avoiding the illnesses that result from defecating in uncontrolled locations.

The construction of the 22 latrines accomplished 100% of our objective. They are of good quality and in accordance with the design.

The coverage of "adequate sanitation" (a semi-elevated latrine in good condition) is 100% for this community.

5 - PROMOTION OF HEALTH AND HYGIENE

5.1 Activities Completed

The following themes of health and hygiene were imparted to the families of the community:

Period	Trainings and Chats on Hygiene and Health	Participants
July 12-13, 2010	Initial survey concerning population and outhouses/latrines.	23 families
July 13, 2010	First test of water quality	
January 19, 2011	Presentation of the Health Plan	13 beneficiaries

March 31, 2011	Training: Correct management and elimination of trash	14 beneficiaries
April 11, 2011	Importance, Use, and Management of Water	23 beneficiaries
April 26, 2011	Use and management of outhouses/latrines	19 beneficiaries
May 11, 2011	Family hygiene and food management	13 beneficiaries
May 16, 2011	Sanitary monitoring and inspection of the water system.	5 members of the CAPS
May 16, 2011	Home visits regarding outhouse construction	16 homes
October 20, 2011	Second water quality test	

The topics were selected and undertaken in order of priority, taking into account the hygiene profile of the community. Using conversations and illustrated trainings, with the intent to promote healthy habits, stimulate positive conducts and attitudes, avoid erroneous beliefs concerning healthy conduct and bring about educational experiences that can improve wellbeing both for the individual and the community. The practical application of these conversations can be expected to reduce water-borne illnesses and thus improve overall hygienic conditions.

These groups were prioritized for their influence in effecting preventive behaviors: Head of household, school-age children, and members of the CAPS. It was agreed to choose schedules that made the trainings available for these groups so that their regular daily activities would not be interrupted, and the trainings were also coordinated with the MINED to make sure that space for the trainings was available (at the school).

The CAPS members in particular were trained because it is important for them to understand the reasons for their various functions as committee members, and so that they are capable to lead others successfully in those functions and train them successfully. The health promoters were each provided a Health Manual so that they would have informative material with which to continue their health work in the community.

The boys and girls are the men and women of tomorrow, so their instruction is of great importance. They were trained in topics of community hygiene, personal hygiene, correct use of the outhouse, with emphasis on hand washing, correct use of water, especially to promote water conservation. There is no school in the La Esperanza community because all the children attend school in La Isla, and there they received all their trainings.

Educational on basic topics were done for the beneficiaries in general; each was provided an informative folio with the topic, general information, and questions and answers on the subject.

The presentation begins with an overview of topics and objectives, in accordance with the educational level of the participants. The themes are brought forward in a simple, participative manner, and organized to meet the needs of the specific participants. The include

demonstrations and instructional dynamics to motivate and entertain the group. These have duration of 60 to 90 minutes.

Objectives

1- The "Leadership" objective implies that the members of the CAPS will be able to direct the rest of the community in activities that improve family and community hygiene and the sustainability of the project.
2- The "Water management" objective is directed at adults and children, and aims at proper disposal of waste, in order to diminish illnesses spread through waste-related vectors.
3- The "Use and appropriate management of water" objective aims to reduce water-borne illnesses.
4- The "Use and management of latrines" objective aims to reduce oral-fecal diseases and to make sure that families learn appropriate use of the latrines, to reduce the environmental impact of human waste.
5- The "Personal cleanliness and food handling" objective aims to strengthen good habits in personal hygiene and food handling.

Proceedings and Topics

Training begins with the presentation of the topic and its objectives. These are adjusted to the educational level of the participants, in a simple, participative manner, and with duration of 60-90 minutes.

The presenters use didactic materials including flipcharts, laminated pictures, and posters.

Training by the APLV Health and Hygiene Promoter

In order to evaluate the assimilation of the material a set of direct questions and comments is used.

Home visits are an integral part of the work of the Health Promoters in effecting changes in attitudes. During these visits they are able to verify whether the topics taught in the trainings are in fact being practiced and to encourage families in that respect.

Attendance

Overall attendance was quite high; some absenteeism was a result of the fact that this was an important period of planting during the agricultural cycle. There was also some collision of meeting times between APLV and other organizations.

5.2 Results achieved

In order to evaluate the impact of the health and hygiene program home visits were made using the method of interview and direct observation, using a hygienic monitoring form.

25% of the households were selected for monitoring at the beginning of the project, and these families were visited for evaluation several times.

This table summarizes the results obtained:

Aspects	Situation before	Results achieved
Ownership of outhouses/latrines	42% (10 homes) did not have outhouses. 14 homes did have outhouses but 71% of those were in poor condition, with only the remainder in good condition.	100% of the proposed list have outhouses
Family hygiene	42% of the families demonstrated good hygiene habits	91% of the beneficiaries are demonstrating appropriate hygiene habits
Puddled wastewater (gray water)	52% of homes had puddles	91% elimination of gray water
Trash Management	29% demonstrated adequate management and disposal of trash	74% show adequate trash management
Control of domestic animals	100% of homes had animals running loose	60% manage domestic animals adequately
Household management of water	29% had dirty and uncapped drinking water	82% had clean and capped water
Good use of water	88% manipulated water inadequately	69 % use appropriate manipulation of water (they use a clean vessel to get water from the faucet).

Analysis of Results

With respect to family hygiene, an improvement of 49% was achieved, demonstrated in the incorporation of personal hygiene habits like a daily shower and hand washing, especially with the children.

In 52% of homes there used to be puddles of gray water near the dishwashing or clothes-washing areas, but now 91% of homes correctly eliminate gray water, demonstrating a 43% improvement. The rest of the families will have ongoing support from the community health promoters.

In the management of trash, 71% of families did not previously do appropriate disposal. Currently 74% of families have adopted different means of disposal such as burning or constructing pits to bury trash, achieving a 45% improvement. With respect to the families that have not yet adopted changes, work continues in community cleanup visits and promotions by the promoters of health and also the teachers from the school at La Isla.

Before the project 100% of families exercised no control at all over their domestic animals, so they ran loose contaminating the entire area. Currently 60% have taken simple measures to control animals, such as tethering them or constructing small enclosures.

In the area of water supply and storage, before the project 50% got their water from wells and streams and the other 50% got their water from a system of hoses without any protection or treatment. Now 100% have the privilege of having faucets at their own homes, allowing them to consume water of much higher quality. With regard to proper storage of water there was an improvement of 11%, taking into account that there weren't a lot who were storing water inappropriately before the project. With respect to water handling, there was an improvement of 57% over initial data.

5.3 Future follow-up for the project

Follow-up visits will be done in cooperation with the social promoters to continue monitoring of the sanitary management of the system and the community. The coordination with MINSA will continue with water testing, and with the MINED schoolteachers giving follow-up chats and trainings to students and their parents.

6 - ENVIRONMENT

6.1 Review of the situation of the micro-watershed

The micro-watershed that provides potable water for La Esperanza is located about 4 kilometers away from the community, in a protected area that is part of the Reserva Natural Cerro Musún. This is the same spring that provides water for the community of La Isla. The micro-watershed has an area of 45 manzanas (about 31 hectares or 78 acres), all of which is in a good state of conservation.

6.2 Activities Accomplished

6.2.1 Development of coordination between local stakeholders

In order to improve the levels of protection of the micro-watershed activities were developed with the CAPS and communities of La Isla and La Esperanza. This was aimed at the development of management and protection of the area.

6.2.2 Protection of the spring and development of the micro-watershed

The activities were oriented toward the protection of the area of the micro-watershed which, because of its location inside the natural reserve, currently has a good conservation situation.

Nevertheless, it is important to signal to the committee that it must participate in the management of the spring in coordination with the community of La Isla.

Since both communities and committees work together, they are able to collaborate to work for protection of the spring and the area around it.

6.2.3 Trainings for families in the community

Period	Topics for Environmental Trainings	Beneficiaries
February 2011	Protection, conservation, and restoration of natural resources.	CAPS and beneficiaries
March 2011	Importance of the forest and the environment for the production of water.	Schoolchildren and CAPS
March 2011	Environment and management of the Micro-watershed	CAPS and beneficiaries

6.3 Results Achieved

- The committees of La Esperanza and La Isla are united in their work to conserve and protect the area of the micro-watershed.
- Planting of 500 plants in the area of the spring.
- Local stakeholders show interest in the protection and conservation of the area of the micro-watershed and the Reserva Natural Cerro Musún.

7 - CONCLUSION

7.1 Achievement of Objectives

The objectives of this project, which combined potable water, sanitation, health, hygiene, and the environment, were met.

The beneficiary families now enjoy quality water in adequate quantity and close to their homes.

In addition, the community enjoys improved sanitation, which allows improved health for the inhabitants.

The families were made aware of the problems of hygiene, increased their awareness in this area, and improved their daily habits. The community was sensitized to the importance of preserving the environment and in particular their water resources.

The CAPS Committee has been trained in all aspects of the administration of the system: Technical, administrative, and financial. These components of the integrated project will permit significant reduction of water-borne illnesses in the medium term. Since September, the proximity of quality water in adequate quantity has already led to an improvement in the quality of life of the inhabitants.

7.2 Lessons Learned

This project confirms the experience of APLV that shows us that when the initial management of a project comes from the community, there is little risk of discouragement among community members, and participation and motivation are high.

7.3 Thank You

We want to thank the community of La Esperanza for their participation and the fulfillment of multiple activities during the execution of the project and the confidence that they demonstrated in APLV.

Thanks to the municipal government of Rio Blanco for its contribution and support for the development of this project.

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We especially appreciate the donors whose valuable donations made possible the execution of the water project and who have made such an impact in this community, in the social and economic but most importantly in the area of family health.

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Thanks to **RURAL WATER VENTURES, GLOBAL WATER AND LAIRD NORTON FAMILY FOUNDATION** for their valuable and very much appreciated support.

Thanks to all the personnel of from the various groups within APLV who were involved in the physical execution of this project, all of whom worked side-by-side and hand-to-hand with us the beneficiaries.