

## SHUAR HEALTH PROJECT SUMMER 2007 REPORT

### *Making a R.E.A.L. difference through Research, Education, Action, and Leadership*

In the Summer of 2007, the Shuar Health Project succeeded in providing ten communities in the Ecuadorian Amazon with a clean source of drinking water. Twenty-five students - including the leadership team, engineering group, and De-Cal students - built 20 rainwater tanks that the team designed from its prior research. Through collaborating directly with the local Shuar leaders and communities, the Shuar Health Project accomplished its goal of making a R.E.A.L. difference to improve the well-being of the local people through uniting Research, Education, Action, and Leadership.

### **1. RESEARCH - WATER QUALITY TESTING**

#### *\*Tested 32 community sources of water to attain quantitative evaluations of improvement.*

Students tested the water quality of the primary sources of drinking water in each of the ten communities using *E. coli* and total coliform as baseline indicators of fecal contamination. These sources included rivers, lagoons, water holes, and hoses connected to streams. Prior testing conducted in the Winter of 2007 showed that the communities' water sources were highly contaminated and unsafe for drinking or bathing. Subsequent water quality testing this summer showed that water quality fluctuates with the seasons, improving with dry weather and worsening with frequent rains. As a result, the results have shown that most communities lack a reliable source of clean drinking water. In order to verify the improved quality of drinking water provided by the rainwater harvesting tanks, this data will be compared with current and future quality testing of the community tanks.

### **SANITATION FOCUS GROUPS**

#### *\*Conducted 11 focus groups to assess sanitation needs and latrine feasibility.*

After completion of the building phase, the student team also conducted latrine surveys in the form of single gender focus groups in each community to discuss their sanitation system needs and expectations. To begin, all community members were asked to sketch their ideal latrine and to present it to their focus groups. By asking community members questions about their pictures, the students demonstrated the challenges of building and maintaining latrines. The students facilitated small group discussions on how to solve these issues before presenting their ideas about a potential compost latrine model. For example, the communities came to a consensus that household latrines would be more practical than community latrines in overcoming key challenges such as distance, usage, and maintenance. In addition to determining design criteria, the community discussion focused on the importance of latrine maintenance and upkeep, as well as possible plans for successful implementation. The community-elected *responsables* will be in charge of maintaining communication between the student team and the communities throughout the future process of designing, building, and maintaining latrines.

### **2. EDUCATION - HYGIENE AND SANITATION**

#### *\*Held 20 educational sessions with children, mothers, and community members.*

In June, project leaders and students from the De-Cal class conducted health education sessions in each community focusing on sanitation, contagious disease transmission, and water-borne disease prevention. To enhance learning and retention, students used creative teaching methods such as posters, songs, games, activities, brochures, and demonstrations. In addition, they held separate sessions for adults and children. These educational sessions were designed by the De-cal students during the spring semester course: "Making a R.E.A.L. Difference: Ecuadorian Amazon."

### **3. ACTION - TANK CONSTRUCTION**

#### *\*Constructed 20 rainwater tanks to provide 10 communities with safe drinking water.*

Eight cement tanks were constructed in five communities accessible by the road, and twelve plastic tanks were built in five communities accessible by foot. The cement tank designs used were the Thai jar and an ultra-light ferrocement tank, both designs in the Oasis book by Art Ludwig that have been field-tested and implemented throughout the world, including in regions with similar conditions. The tank was first piloted and tested by the student engineering team in Berkeley and then modified in a second pilot phase in Ecuador. Our final design for both cement and plastic tanks were fitted with fixed-volume first flush diverters.

Community participation was strongly encouraged throughout all stages, from material transportation to construction and maintenance, with the goal of generating community ownership and knowledge. For example, the student team built the first tank(s) with each community and encouraged the local people to build the last tank on their own in order to solidify what they learned. Project funds were used to provide materials for construction of rainwater harvesting tanks with the vision that community members would become empowered with the knowledge of simple water tank construction and safe water practices for preventative action against disease. As a result, the students built more than just tanks; they built a foundation of knowledge and skills in the communities that the people can use to provide themselves with safe drinking water in the future.

#### *\*Provided 20L safe-water storage containers to 120 families.*

Each family was also provided with a safe water storage container so that the clean water from the tanks does not become contaminated prior to consumption in the homes. The importance of safe transport and storage of water from the tanks was emphasized in the education sessions.

#### *\*Designed and enacted tank maintenance strategy with communities.*

Community meetings were held to discuss tank maintenance, and written instructions were also provided. In order to ensure consistent and quality tank maintenance, each community elected one member, a *responsable*, to take charge of both tank maintenance and communication with the Shuar Health team over the next semester. The student team leaders held a training session for all the *responsables* at the end of the summer in which they discussed maintenance and communication to coordinate between the communities and the team. They will be responsible for providing detailed monthly reports by the end of each month. As an additional incentive, those communities who demonstrate that they can appropriately

maintain the tanks through these monthly reports will receive the opportunity to participate in the future latrine process; while those communities who fail to maintain the tanks will lose their opportunity to build latrines to new communities who apply to participate.

## **5. LEADERSHIP**

### ***\*Created opportunities for student learning and leadership.***

As a completely student-led initiative, the Shuar Health Project has been teaching undergraduate and graduate students how to research and assess the needs of international communities for two years. Furthermore, this summer the project gave 25 students the unique opportunity to transform their research into action to improve peoples' lives by working directly with communities. Students learned how to coordinate essential aspects of research and development projects by organizing almost every aspect of the tank construction process: designing models, pilot-testing designs, training field workers, scheduling construction, presenting ideas, motivating people, recording results, assessing outcomes, overcoming challenges, collaborating across cultures, and more. The students are also extremely grateful for the support and advice they receive upon request from their network of faculty advisors.

### ***\*Collaborated with local community leaders and government.***

The group signed a new *convenio*, or official agreement, with the recently-elected president and vice president of FENASH-p, the Federation of the Shuar Nationalities in the Pastaza (government) of which the communities are a part. This new *convenio* replaced the previous *convenio* with the old leadership and assures the continual collaboration between the Shuar Health team with the Shuar communities until 2010, during which the student group can renew their contract if they and the communities so desire. The document clearly outlines the team goals and project objectives as well as the responsibilities of the communities, the student group, and FENASH-P. Specifically, the vice president has offered to be the new in-country coordinator, serving as the key contact between the team members and the communities and fostering further collaboration between FENASH-P and the student group. The agreement also included the process by which other Shuar communities can join and participate in the project.

### ***\*Overcame challenges.***

As with any international project, it is not a matter of if there will be challenges – it is a matter of when and how they will be addressed. By working together and maintaining a positive attitude, the Shuar Health team successfully overcame the five major challenges that arose:

1. Transportation – Students used all locally sourced materials, and communities carried supplies into the interior by foot.
2. Time Constraint – Student leaders treated the schedule like a chess match – constantly anticipating potential moves or changes and making necessary arrangements in advance in order to complete construction in all 10 communities.
3. Funding limitations – In order to give 25 students the opportunity to build 20 drinking water systems, students had to stretch the budget and to make up the deficit through other personal and outside sources.
4. Health and Safety – Student leaders brought necessary equipment: walkie talkies, wilderness first aid-kits, satellite phone. They also learned about the closest medical care and hospital routes before working. Every student was required to get first-aid certified and to carry their own personal first-aid kit.
5. Individuals – Positive team dynamics and democratic group discussions allowed the team to overcome challenges presented by two individuals regarding tank design changes and a possible documentary.

## **7. FUTURE – ASSESS, IMPROVE, SCALE UP**

### ***\*Increased project sustainability through expanding local network & community involvement.***

The student team focused on building a stronger local network through expanding its contacts within the Shuar communities and government (FENASH-p) and making new key contacts in Ecuador. For example, each community elected a responsible to serve as the community coordinator of the safe water and sanitation process. Similarly, the board of directors of FENASH-p selected the vice president as the head community coordinator for FENASH-p.

Over the course of the summer, the group also met and made future plans to collaborate with the one of the only two Shuar doctors in Ecuador. Furthermore, the team met with the local Rotary club and made contact with local Ecuadorian students in the region to work together in the future. By increasing collaboration among local groups and professionals within the Shuar communities and in Ecuador, the Shuar Health Project strives to become more sustainable as it looks to expand its work into all 32 communities of the district of FENASH-P and beyond.

### ***\* Created good transition of student and community leadership***

By holding a training session with all of the responsables of every community at the end of the summer, the student leaders ensured that all of the communities have a coordinator who has signed an agreement to complete the following five responsibilities: 1. ensure health and safety of all involved, 2. maintain communication, 3. maintain tanks, 4. send monthly reports, and 5. organize construction logistics (lodging, food, material transportation, work days). For each responsible of every community, student leaders also prepared extensive folders with all necessary information such as project history, official documents, tank maintenance, monthly reports, etc. In addition, a thorough evaluation of the tank construction process was conducted by evaluating positive and negative aspects of the process as well as ways to improve.

Beginning its third year of operation, the Shuar Health Project is undergoing a transition in student leadership as many of the original student leaders have graduated or are studying abroad. In order to successfully train the new generation of leaders, one of the founding members and primary leaders will be in charge next year – Karis Miyake. Half of the old leadership team will be on campus in the Fall to help interview and train newly selected leaders from the Spring 2007 De-cal class that went to Ecuador this summer. In addition, applications and interviews will be held for other positions that require special expertise (such as engineering for latrine designs). By the Spring, the De-cal leaders will be trained and the other half of the old leadership team will be returning from studying abroad. Working together, the new Shuar Health team will continue to expand student involvement by teaching another De-Cal course in Spring 2008, and will return to the communities in the Winter and Summer of 2008 to continue making a R.E.A.L. difference in improving overall health and well-being.