

News from Geólogos del Mundo

Supply of freshwater to four communities of the municipality of Conchagua (El Salvador)

In September, World Geologists completed a freshwater supply project to the communities of La Brea, San Ramón, el Caribal and Los Monos (El Salvador). This project will reduce gastrointestinal and all water-transmitted diseases, minimizing the costs of public health and the works needed to transport freshwater to the dwellings (generally done by women), thus increasing the available resources for families.

These communities, generally rural and with low income, received their water supply from springs and shallow private wells, generally bacteriologically polluted. In summer many wells dried, and the flow of springs was reduced, so that part of the population was left without access to fresh water.

The geological substrate of the area of the project is mainly volcanic, belonging to the Balsamo formation (Mid Miocene to Upper Pliocene), although there are also Quaternary alluvial and/or colluvium deposits. Main fractures are N-S.

The project was carried out in two phases, the first financed by the Nando-Peretti Foundation, and the second by the Community of Madrid.

Exploration Phase

The objective of the first phase was to carry out a hydrogeological study before drilling the borehole. The study included an inventory of wells and springs in order to gauge the underground water resources. Later, a geological and photogeological survey of the area was carried out, and finally a geophysical survey including Electric Vertical Logging and electric sections.

Based on the results of the geophysical logging, a 6" test borehole was drilled, using a rotapercussion drill with a bottom hole hammer. During the drilling, it was estimated that the flow from the well was about 13 l/s at 55 m depth. The water level measured in the well was located at 15 m.

The lithological section drilled was, from surface down to 18 m: red clays; from 18 to 24 m: red tuff (with water flow) and from 24 m to the end of the borehole: basalts, probably fissured. It seems that there are two aquifers, one upper open aquifer (18-24 m) and a lower fissured one. Both aquifers are probably transected by a fault, in turn probably linked to a large one, all of which generate a high water flow.

Casing was carried out taking into account the lithological section and the increased flow with depth. It was then decided to install 160PSI 8" perforated PVC tubes from 18 to 27 m and from 33 to 51 m.

Finally, the well was cleaned and developed using compressed air. After that, a pump test was carried out to determine the hydrogeological characteristics and the maximum exploitation flow, which was close to 30 l/s. during the pump tests, water samples were taken for analysis, which indicated that the water was drinkable.

Finally, a 75 m³ semi-buried brickwork structure was built. This was located in La Brea, because of its greater elevation.

The objectives of the second phase, which started in September 2008, were twofold: construction of the water mains from the deposit to the dwellings and the construction of a black sewage as well as strengthening of the organizational and managerial capacity of the freshwater system.

Construction of the mains phase

The project was designed for a projected population of 3,600 inhabitants in 20 years time, (current population 2,100), and an estimated resources need of 1,101 inhab/day.

From the topographic survey, a branched type mains distribution was designed, using 160 psi and 4" (mains) to 1" (house connections) PVC tubes. The network had regulating distribution valves allowing closure of sections in case of a breakdown. House connections have man-holes which include control valves and a water meter. The tubing was laid in a 70 cm deep trench with 3 stretches of galvanized steel tubing.

All works were carried out by the beneficiaries with the supervision of WG.



Inside the well, a 10CV single-phase submersible pump was installed. To automatically control the start and stop of the pump depending on the water level, an electric installation for the valve of the floaters inside the deposit was also made. At the tank exit, a chlorination system was installed.

Community work

Several meetings were organized with representatives of each community to form daily working shifts and to elect the managers of the Water Board. A Board with six men and five women was subsequently elected representing proportionally all three communities.

In order to strengthen the community's organizational and management capacities for the freshwater system, several training courses for the Water Board were organized in matters such as pumping electric and chlorination systems, as well as in accounting, administrative and juridical matters so that the system is sustainable.

Awareness campaigns in the communities on the control of water consumption, management of solid residues and sewage, the importance of the environment and the resources that they have available, were carried out throughout the whole project by organizing meetings with the communities and in the schools.

Printed material has also been produced, in the local language which includes the training courses and the technical and accounting material.

Four General Assemblies were also organized with all the beneficiaries of the system, in order to approve the statutes and bylaws of the Water Board.

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News from Spain

The Geological School of Granada (Spain) turns 50

The 50th anniversary celebrations on 15 and 16 May 2009, of the introduction of geology studies at the University of Granada, managed to gather more than 800 former students from one of the foremost Spanish geology schools.

Among the official events, all of which were led by prestigious geologists educated at this university, those that stood out were the book presentation (see picture below) "50 years of geology at the University of Granada" by Professor Juan Antonio Vera (President of the Organizing Committee), the presentation entitled *Are the earth's metal resources depleting? Geological responses with examples of findings in the Andes*, by Professor Lluís Fontboté (Head of the Mineralogy Department at the University of Geneva), the presentation *Social perception of Geology: some ideas for improvement*

Professor Vera, President of the Organizing Commission, presenting the book '50 años de Geología en la Universidad de Granada'

by Dr. Cecilio Quesada (Chief of the Technical Cabinet of the Spanish Geological and Mining Institute, and Secretary of the National Commission of Geology) and the Round Table on *Present and Future of Geology in Spain*.

Among the many leisure, and similar social activities that stood out at the event were the inauguration of a commemorative monolith in a town square carrying Professor Fontboté's name (founder of the school during the 50s), a musical concert with outstanding performance by the *Ensemble La Danerye* (www.ladanerye.com), consisting principally of geologists from Granada, a pleasant march of football, *Globigerinidos versus Esquistosos*, a long tradition between geology teachers and students, as well as a poster exhibition with photographs and texts from each of the university's yearly graduate classes. (<http://www.ugr.es/local/agcasco/group/>).

The School's influence on scientific research and industry

The University of Granada has produced more than 2500 licenciates and over 260 doctors of geology during its 50-year history. They have come to play an important role in Spain and in the rest of the world, in the academic field as well as the professional.

This history is characterized by two phases with very different characteristics. *Phase one (1958 - 1983)*

The first part of the School's history was very distinguished, on the academic side, with the submission of the first set of PhD theses, destined to create an indispensable, basic infrastructure for regional, geological knowledge that would lead to highly focused research. Worth promoting is the important collaboration with French and Dutch schools at the beginning.

From this stage in the field of professional geology, one can distinguish the prestige that this university's prominent

