

Water Scarcity: The Water Supply Problem in La Santiagueña Neighborhood in Paraná

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Summary — Water is a resource that is used in every home in the world to satisfy our basic needs as humans. The water stress in La Santiagueña neighborhood has been an annoying problem for the people who have been living there for a long time. There are many other problems in the area that arise from this main problem and they are affecting almost every home there. The aim of this presentation is to deal with the water supply problem in La Santiagueña neighborhood by increasing the pressure in the pipes with pumps in each home.

Resumen — El agua es un recurso que se utiliza en todos los hogares del mundo para satisfacer nuestras necesidades básicas como seres humanos. La falta de agua en el barrio La Santiagueña ha sido un problema molesto para las personas que viven allí desde hace mucho tiempo. Hay muchos otros problemas en la zona que se derivan de este problema principal y están afectando a casi todos los hogares allí. El objetivo de esta presentación es tratar el problema del suministro de agua en el barrio La Santiagueña aumentando la presión del agua en las tuberías con bombas en cada hogar.

I. INTRODUCTION

Water is a resource that is used in every home in the world to satisfy our basic needs as humans. From hydration, sanitization to cleaning our rooms. Water is an important part of our life that we must take care of. The problem starts when this resource is missing due to human and infrastructure mistakes.

The people who live in La Santiagueña neighborhood, which is located in Paraná, have water cuts, especially when it rains, due to the lack of maintenance in the supply pumps. Meanwhile, hundreds of people cannot do their basic activities.

The aim of this presentation is to deal with the water supply problem in La Santiagueña neighborhood by increasing the pressure in the pipes with pumps.

First, we are going to show the area of the city that is the focus of this work. Second, we are going to discuss the problem connected with water scarcity in La Santiagueña neighborhood. Next, we are going to introduce the factors that give rise to this problem. After this, we are going to discuss the impact that this issue has in the area. Finally, we are going to describe our action plan to approach this problem.

II. PROBLEM DEFINITION AND ANALYSIS

A. Description of the Context

La Santiagueña is a medium class neighborhood. As we can see in Fig. 1, it is located in the east zone of Enrique Berduc Park. Also, it is situated a few streets away from La Costanera. This neighborhood is surrounded by Nogoya Street, San Lorenzo Street, San Luis Street and Zúrvira Street.

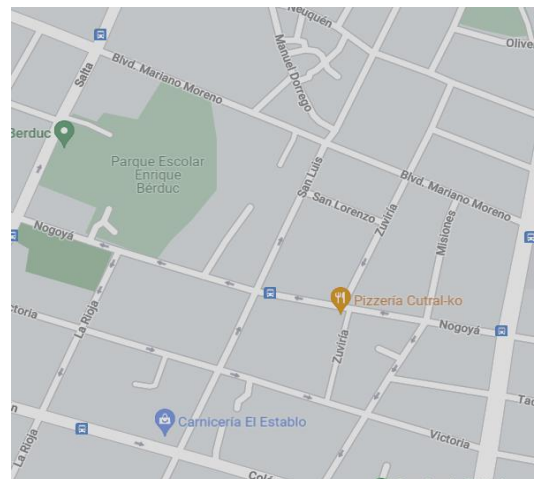


Fig. 1. La Santiagueña neighborhood location.

Fig. 2 shows that it has a wide sidewalk with grass and trees. There are around 20 houses per street and there is only one building which has 6 floors and 18 apartments.



Fig. 2. La Santiagueña neighborhood.

B. Problem Statement

The water stress in La Santiagueña neighborhood has been an annoying problem for the people who have been living there for a long time. There are many other problems in the area that arise from this main problem, and they are affecting almost every home there.

C. Description of Scenes that Help Picture the Problematic Situation



Fig. 3. A broken pipe.

In Fig. 3, we can see one common situation in “La Santiagueña” neighborhood. This pipe has been broken for a long time.



Fig. 4. Water gushing onto the sidewalks.

In Fig. 4, it can be observed another annoying situation in the neighborhood. This situation is related to water gushing onto the street or sidewalks due to the broken pipes. This scenario becomes worse when it rains, because the water from the rain and from the broken pipes make the street completely flood.

D. Identification and Analysis of Causes that Give Rise to the Problem

There are some factors that give rise to the water stress problem in this neighborhood. The first cause of this problem is the quality of the water. The water that is sent through the underground pipes is previously collected from the Paraná River, to be later treated in a water treatment plant. The process that is done in the plant is deficient, the quality of the water sent to the pipes is not good, due to this, the pipes corrode, become clogged and break. In addition, the water

distribution networks are old, which facilitates breakdowns. This is one reason why the water does not reach the homes of the neighbors.

Another cause is the water low pressure. In summer, when there is excessive use of water, the flow is insufficient. The people cannot cool down because pools cannot be filled with water. Also, they cannot take showers. The lack of water increases dehydration in people and animals.

E. Identification and Description of the Consequences

Water scarcity in this neighborhood also has some negative consequences for the people who live there. The lack of water does not allow the people to cook some types of food, as well as to ensure good hygiene and hydration. Moreover, in summer the people cannot refresh themselves. Also, there is frequently low-quality water running through the pipelines due to the improvised solutions, which are temporary. Generally, they are short term solutions which means that the consequences will continue. All these situations not only produce physical problems in the people who drink the water, but also generate a lot of stress in them.

III. THE WAY FORWARD

A. Problem Approach

After having analyzed the causes and consequences that water shortage has for La Santiagueña neighborhood, we believe that the implementation of water pumps in each home is a possible solution to this problem. These pumps can be used to easily fill the water tanks, which are normally located on the roof of the houses, at a height of five to ten meters approximately.

To achieve this, a 0.50 HP water pump can be used, which pumps 30L/min, and it can pump water with good pressure at a maximum height of 25 meters. Also, it is monophasic and has two years of guarantee. If this device is used with clean water, the performance will be the best possible. This pump is very quiet, so the neighbors may not complain about disturbing noises.

The pump specifications are as follows: the pump axis is constructed with cast iron and the pump has a bronze impeller which improves the durability. This type of pumps provides more amount of water flow compared to the centrifugal ones. In relation to the electric specifications, it has electrical overload protection to increase the reliability of the device.

B. Strengths and Weaknesses of the Proposal

This solution has many strengths. These are the speed of repair and the availability of spare parts since it is something that abounds in the market. Another advantage is the quality-price relationship. Finally, this type of water pump is adaptable to most situations and this increases its effectiveness.

The use of a water pump also has some weaknesses. The first one is that its installation is not viable in high buildings. Also, it is expensive so some people cannot afford its cost. Moreover, the pump installation requires additional expenses such as construction materials, labor, among others.

IV. CONCLUSION

We believe that the most urgent problem that La Santiagueña neighborhood faces is the low water pressure. It

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is well known that there are other annoying problems that are consequences of this one, but it is important to solve this issue first because people need to carry out their daily activities.

The implementation of water pumps is considered a very feasible solution because the greatest effort that is needed is an economic one. In other words, neighbors only need to buy the device as well as the construction materials and to pay the workforce's salary. Also, many neighbors may make a big

purchase in order to request a discount for buying many devices. This solution is a medium or large-term solution compared with the investment that has to be done, but it is the best solution in terms of time and efficiency.

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The present project is a skills integration activity in Inglés I at Universidad Tecnológica Nacional, Facultad Regional Paraná, carried out by EFL engineering students. The yearlong project requires students to delve into a problem in the city where they live and to address it by means of a simple project in English. Should the reader have any questions regarding this work, please contact Graciela Yugdar Tófalo, Senior Lecturer, at gyugdar@frp.utn.edu.ar.