Non-Revenue water reduction

Santa Fe, Argentina

1. Objective

The main objective of this innovation pilot is to implement a non-revenue water reduction program within the city of Cañada de Gómez, Province of Santa Fe, Argentina. The utility Aguas Santafesinas S.A. (A.S.S.A.) is engaged in a program to reduce non-revenue water in 15 localities, including the city of Cañada de Gomez (35,000 population), with up to 40% water losses in its network. Cañada de Gómez now spends large amounts of resources in treating groundwater for its water supply systems, while losing large volumes of water during distribution in the network.

2. The water supply system

A.S.S.A., through its specialized non-revenue water reduction unit (RANC – Reducción de Agua no Contabilizada), is devoting resources to address water loss throughout its 5700 km distribution network. Faced with climate change impacts that limit current and future availability of water, such as recurring droughts and depletion of groundwater, the utility is focusing on non-revenue water to improve its existing supplies and its performance. The case of Cañada de Gómez is of particular interest. The community is located in the South Central area of the province of Santa Fe, with aquifers that contain high amounts of salinity and arsenic. A.S.S.A. currently relies on a large number of low-flow wells (at Puelche aquifer) to extract water and treat it at a Reverse Osmosis (RO) Plan. The plant has 3 modules of 150 m3/h each to supply a population of 30,000 inhabitants. The cost of operation and maintenance of the RO plants is very high due to high labour and energy costs. As of 2019, approx. 4.1Mm3 of water was transported through its network (190 km) , while only 2.5Mm3 was invoiced, representing a loss of around 40%. In the summer months, the water supply is not enough to cover the city's daily demand.

In 2019, A.S.S.A. designed a NRW program for Cañada de Gómez, and had allocated resources for hardware and software for leak detection. Due to the COVID19 outbreak, all implementation had to be postponed. While the network is fully digitized, there is no GIS to integrate and analyze data on flows, pressure and losses. A.S.S.A has all the technical capabilities to develop all the activities required (personnel, counterpart funding for equipment, leak repair equipment and crews, etc.) and has gained some experience in the implementation of NRW programs, such as the NRW in the District of Firmat (see section 5 for link to document). However, it now seeks to renew it NRW reduction plans for Cañada de Gómez, including the integration of hardware and software technology.

3. The Challenge

In order to address A.S.S.A.'s needs for improving water services in Cañada de Gómez, Santa Fe, the utility needs a well-structured program to reduce non-revenue water. The NRW reduction solutions need to be supported by an efficient leak detection program, the necessary hardware and software to encode and characterize events (leaks), the technology to transmit information, an adequate response from field operators (for on-site leak repair, supervision, etc.) and adequate reporting of all the analytics and NRW activities that ensued.

4. Pilot Project General Structure

A.S.S.A. is looking to develop a pilot application to reduce NRW in Cañada de Gómez, Santa Fe, which should include, among others:

- Defining the project area
- An assessment of the existing network, with a characterization based on age and condition of the network (based on existing inspections of the network and leak reports available in A.S.S.A.) and determination of a scope of work for coverage of a leak detection program for NRW.
- Review of existing methods of leak detection (acoustic) and proposed method for developing an integrated leak detection program through this pilot application.
- Use a software application to detect leak detection information and reporting, including operational modules for leak repair and network maintenance/management.
- Establish operational routines for NRW reduction, with applications and dashboards built into the A.S.S.A. and its RANC unit.
- Develop capacity building for A.S.S.A. staff in the use of the hardware and software introduced through the pilot.

5. Relevant Company/program information.

https://www.aguassantafesinas.com.ar/portal/

https://www.aguassantafesinas.com.ar/portal/quienes-somos/canada-de-gomez/

https://www.aguassantafesinas.com.ar/portal/obras-por-localidad/canada-de-gomez/

"Informe A.S.S.A. RANC 2020", with report of activities 2013-19, and results of the NRW in the District of Firmat (https://.....)

Existing Water Pipe Network

District: Cañada de Gómez

Pipe function	Diameter Range (mm)	Material	Lengtht (m)	Observaciones
Distributor	sin datos		520	
	75 - 76	Sin determinación	441	
		AC	29,236	
		HF	39,673	
		PVC	42,341	
	90	PVC	3,728	
	100 - 110	AC	5,360	
		HF	415	
		PVC	10,885	
	125	HF	1,738	
	150 - 160	Sin determinación	414	
		AC	4,392	
		HF	7,699	
		PVC	12,938	
	175 - 178	AC	65	
		HF	1,403	
	200 - 203	Sin determinación	401	
		AC	124	
		HF	2,118	
		PVC	1,741	
	225	HF	675	
Maestras	250 - 254	AC	1,444	
		HF	1,360	
		PVC	3,547	
	300 - 315	HF	4,267	
		PVC	4,650	
	350 - 356	HF	236	
		PVC	6,130	
	400	AC	1,519	
		FD	300	
Total			189,760	