

## Consortium strengthens sanitation

Ibiporã's rates of water supply and sanitary sewage coverage for both urban and rural populations are much higher than the national average. Here, the infant mortality rate is 11.82 per thousand live births. It was the first authority in Brazil to win the national award for sanitation quality. In 2003, Ibiporã received the ISO9001:2000 certification. It already serves as a reference point for municipalities from Paraná fighting to regain control over the management of their sanitation services. The municipal water and sewage services of Ibiporã (SAMAE) now seeks to create an inter-municipal consortium in order to obtain economy of scale.

SAMAE was the first autonomous municipal agency in the country to win the national award for sanitation quality (PNQS) granted by the Brazilian Society of Sanitary and Environmental Engineering (ABES). All national municipal service suppliers competed for the award. Winning the award was an incentive for the agency to go after the ISO quality certification. In March 2003, the agency received the 2000 version of the ISO 9001 certificate, which initiated a process of institutional development that involved the entire agency, from operational staff members to the governing body of the authority.

According to Juliano de Oliveira, director of SAMAE, "We wanted to manage our actions more efficiently. We created an improvement plan for our management system. This plan was based on the best national practices, adapted to our local characteristics, aggregating the knowledge and aptitudes of the authority".

Once well structured, the service gained regional visibility. Despite a small

### Ibiporã, Paraná

Population estimate 2005: 46,529 / Index of urban water supply: 100% / Index of urban sewer service: 98.6% / Index of domestic waste collection and treatment: 100% / Index of water consumption monitoring: 100% / Number of water supply connections 14,094 / Number of sewer collection connections 12,990 / Interruptions in water supply: the disruptions occur in cases of maintenance especially in the electricity network / Water supply network length: 258,566 / Sewage collection network length: 232,572 / Total expenditure with services per m3 invoiced: R\$ 0.56 / Average cost: R\$ 0.66 per m3 / Index of invoiced revenue loss: 14.6% / Productivity Index: 2.7 workers per thousand water and sewer connections / Gross annual operational revenue (direct and indirect): R\$ 3,368,262.82 / Gross annual expenses with the service: R\$ 2,553,119.34 / Annual utilisation expenses: R\$ 2,553,119.34 / Infant mortality rate: 11.82 per thousand live births /

Source: SNIS 2003, IBGE 2000 SAMAE Ibiporã

population of little more than 44,000 inhabitants, the municipality is considered a referral point for sanitation services, since it achieved indexes of service delivery supply much higher than the national average.

Because the concession contracts with the Sanitation Service of Paraná (SANEPAR) are expiring, many municipalities from Paraná have considered the possibility of taking over the management of their water supply and sanitary sewage services. Mayors and advisors from these municipalities have visited SAMAE in Ibiporã seeking information on the quality of the authority.

## Collective action

SAMAE Ibiporã is a member of the inter-municipal consortium of sanitation services of North Paraná, founded in Jataizinho in July 2005. The creation of this consortium, the second one in the state of Paraná, appears in the day-to-day reality of law 11,107/05, which addresses consortia, thus introducing new possibilities for public service management. The law allows for articulated arrangements which can rationalise the efforts of sanitation services suppliers.

The municipalities of Paraná are aware of the legal requirements. Apart from Ibiporã, autonomous services from ten municipalities located in North Paraná along with the regional co-ordination of the National Health Foundation (FUNASA) have participated in the consortium.

One of the expectations of the consortium is the installation of a laboratory for water analyses to be used by all authorities with the support of FUNASA. According to Juliano de Oliveira, president of the consortium and director of SAMAE of Ibiporã, “The consortium can join forces and contract engineering, legal or topography professionals in order to provide technical assistance to the municipalities and gain economic status to carry out projects. Moreover, good projects can raise funds from various governmental sectors”.

The authorities of the consortium expect that the association will lead to a rupture in the current isolation they are experiencing and facilitate the exchange of technical and administrative experiences between municipalities that face similar challenges.

## Rural Sanitation

Water and sewer systems have been standard for the 780 residents of the Jardim Kennedy district for over 12 years. The system stands as a landmark for the outstanding performance of Ibiporã in rural sanitation, which is still barely utilised by service operators. There are 120 families living in the rural areas.

Jointly, with the Paraná company of technical assistance and rural extension (EMATER), SAMAE has already constructed water supply systems for three rural communities in the municipality through the rural sanitation programme.

The families composing the community of the Barra do Jacutinga basin were the first group served by the programme. The partnership between EMATER, the Prefecture and SAMAE installed reservoirs and water distribution networks for the community.

In addition to water supply for family consumption, the programme offers water for agriculture, constructing and regulating the supply system for the community reservoirs where mobile tanks get water for irrigation. The positioning of these supply points was thoroughly planned. The irrigators are placed in areas far away

from the water reservoirs, and at the same time are strategically placed with the needs of small rural producers in mind.

The initiative's success led to the extension of the rural sanitation programme to the micro-basins "Saltinho" and "Tres Figueiras". For the latter community, a water supply network of seven kilometres and a 30,000 litres reservoir was constructed.

The rural population, organised into neighbourhood associations, have already formed a partnership with SAMAE. The associations are responsible for the management of the service. SAMAE does not charge tariffs in rural areas. The wells of around 150 rural properties are monitored by the service. SAMAE invested around R\$ 60,000 and EMATER R\$ 51,000 in the development of the programme.

### **All the sewage is collected and treated**

Since 1979, SAMAE has treated 100% of the sewage produced by the urban population, which corresponds to 98.6% of the total volume, in sewage stabilisation ponds. The municipality has two systems for urban treatment located in the north and south of the city. The treatment is highly efficient, with up to 95% of organic matter recycled. The stabilisation ponds system was adopted because of its efficiency and low installation and maintenance costs. The simplicity of its operation does not demand high levels of professional qualification.

The operators of SAMAE live near the ponds. They monitor technical parameters such as pH, DQO and DBO. On a weekly basis, bacteria analyses are conducted on samples from the ponds and on the reservoirs receiving the treated effluent.

Ibiporã is one of the few cities in the country possessing a complete sewage system, which includes a public reservoir, building reservoir, emission exhaust system, pumping station and treatment station.

The authority estimates the monthly cost of sewage treatment to be R\$ 1,500 per capita. The technology adopted by SAMAE is defined by the technical staff. Juliano de Oliveira, director of SAMAE, affirms, "We want to develop our intellectual capital in a permanent way with training courses and information flow".

As for the collection network, a digital record is available that facilitates repair work and the swift response to the consumer's requests regarding sewage connections.

The current challenge for the sanitary sewage system is the installation of a grit removal system in order to improve the efficiency of the treatment ponds. Currently, preceded only by screening, the ponds present a high organic matter sedimentation index, which affects the original planning of the project. The grit removal system could increase the time interval for the cleaning of the bottom of the ponds.



### **SAMAE conducts water analyses 30% above legal requirements**

Up until the end of the 1960s, the water supply system was precarious in terms of both quality and the quantity of water delivered. This situation led the district to sign an agreement with the Public Health Special Service Foundation, the predecessor to FUNASA, towards the end of the 1960s, for the construction of a new municipal water supply system.

The Autonomous Municipal Water and Sewage Service (SAMAE) was founded under law 197 in December 1968. It preceded the construction of the municipality's new water supply system. The Foundation maintained the administrative agreement with SAMAE until 1996. Currently, the authority maintains the technical

assistance agreement with FUNASA. Things started to change in 1971, when the water treatment station (ETA) started operations and increased both the treatment capacity and the amount of water distributed.

Today, SAMAE controls water quality through physical, chemical and bacterial analyses of the unprocessed water pumped from Jacutinga stream and throughout all treatment stages. These analyses are carried out in two hour intervals in the laboratory of Water Treatment Plant. In total, 150 water samples are collected on a monthly basis, which undergo parameter analysis on colour, turbidity, residual chlorine, fluoride and pH. The presence of organic chlorines, organic phosphates and heavy metals is also investigated.

Samples for analysis are collected daily by SAMAE's technicians at the inflow and outflow ETA stations. and every week in the distribution network, complying with the Decree 518/2004 of the ministry of health on human consumption water quality control. As the director mentions: "In order to guarantee the quality of the product we supply to the population of Ibiporã, we analyse 30% more samples than is demanded by the decree".

Since 1997, SAMAE has been conducting market-research and purchasing up-to-date chemical products used in water treatment. SAMAE substituted iron aluminium sulphate with aluminium sulphate, improving, thus, the dosage precision of the coagulant and the efficiency of the coagulation, flocculation and decantation processes.



The wells drilled by SAMAE in the rural area of Ibiporã are making use of the Guarani aquifer. According to the project vision related to the drilling, water would spout out at a depth of 1,200 meters, reaching the Guarani aquifer. However, water sprang out at 480 metres (well n° 01) and at 580 metres (well n° 02). The water flow is at 1000 m<sup>3</sup> per hour with a temperature of 37° C. This flow is sufficient to supply more than two cities the size of Ibiporã.

In addition to water quantity, according to technical reports carried out by SAMAE, the State University of Paraná and the Technological Institute of Paraná (TECPAR), the water is classified as a potable mineral, which really confirms that the water from the wells is in fact mineral. The samples were analysed through tests in the microbiology and pesticides laboratories. The environmental chemistry laboratory classified it as alkaline bicarbonated mineral water.

All this water is a privilege and a gift of nature. Due to the generally exorbitant use of the available water resources on the planet, the issue of supply problems is a global reality. Today, more than 80 countries fight over water resources and every day new reports show how the scarcity of this precious liquid is growing. There are estimates that in 15 years, water will be scarce, "and due to this fact Ibiporã is indeed a privileged city to have these wells," according to the director of SAMAE, Juliano de Oliveira.