

Universal Service

Ever since its creation, the Water and Sewage Autonomous Department (DAAE) has been committed to the universal provision, treatment and distribution of 100% of the water consumed and the treatment of 100% of the collected sewage. DAAE operates using resources derived from tariffs on such services. Although the population of Araraquara-SP has increased threefold since 1969, it continues to receive integral quality services under social control. DAAE initiated the management of solid waste about a year ago and prepares to take over the drainage system of rain water.

In March 2005, DAAE-Araraquara hosted a seminar to debate the initiation of charges placed on alternative water sources that were releasing sewage into the public network. This forum preceded the decision of the Autonomous Service to start charging the private sector for the release of effluents in the public sanitary sewer network. DAAE now monitors all the wells of principally industrial use, which are granted user's rights by the Department of Water and Electricity. These industries produce and discharge significant volumes of effluents or effluents that contain a high level of pollutants.

In October, at a new seminar involving civil society, the city council and regional providers of public water and sanitation services discussed the options for integrated management of urban waters resources.

Araraquara plans to act on an issue facing a large number of the Brazilian municipalities: the reduction of the size of soil surfaces in the urban areas, which results in less water being absorbed, and thus overloading the culverts of the drainage system. The inability of water to be absorbed causes soil erosion and problems in the springs, thus impeding the refreshing of the Guarani aquifer.

The responsibility of the municipality for water resource management is even higher since half of the water for public supply is collected through deep wells reaching the aquifer, which is considered one of the biggest strategic water reservoirs in the world. In the city, only private wells take water from the shallow aquifers Adamantina and Basalto.

As geologist Julio Cesar Arantes Perroni, Planning Coordinator of DAAE points out, "we need this responsible management in order to guarantee the sustainability of the aquifer. We want to promote an exchange of experiences, to hear the population and the specialists, to share our opinions, and thus manage properly urban water in the municipality". He further notes that the role of DAAE should be restricted to the administration and not the execution of works, a task that should continue to be city hall's responsibility.

Araraquara, Sao Paulo

Population estimate, 2005: 197,039 / Urban population: 173,569;
Source: www.ibge.gov.br/cidadesat/default.php in 25/10/2005 / Index of urban water assistance: 100% / Index of urban sewage assistance: 98.3% / Index of waste collection and treatment: 100% / Index of selective collection: 10% in the urban area / Index of water consumption monitoring: 100% / Number of water connections: 70,000 / Number of sewage connections: 68,000 / Coliforms outside the limit: 1.6% / Length of water supply network: 1,018.38km / Length of sewage collection network: 888.62km / Total cost of the service per m3 invoiced: R\$ 0.91 / Average tariff charged: R\$ 1.0 per m3 / Index of invoice revenue loss: 41.3% / Productivity Index: 4.9 workers per thousand water and sewage connections / Gross annual operational revenue (direct and indirect): R\$ 29,101,031.00 / Gross annual cost of the service: R\$ 24,148,336.00 / GDP per capita: R\$ 9,399.00/
Source: IBGE
www.ibge.gov.br/home/estatistica/pibmunicipios/2002/default.shtm

Involving the population

In order to implement actions involving social control and participation, DAAE work with an Advisory Council consisting of 24 permanent and 24 substitute members. They are representatives of the Executive Authority, city hall and state bodies concerned with environment and health issues, guaranteeing an interdisciplinary perspective in the Autonomous Service's work. This council also counts with the participation of NGOs, universities, associations and unions. It is noteworthy that the participation of representatives from areas of environmental planning and others indicated by the Participatory Budget Council, from all the neighbourhoods of the city.

Araraquara supports innovative administration and includes the population in the decision making process for the allocation of public resources in the municipality's administration. In relation to water and sanitation in particular, the budget's development became a true democratic process.

*"In Araraquara we have managed to involve the population in the decision making process of public administration".
Edinho Silva, mayor of Araraquara.*

Campus in Guaratingueta, Wellington Cyro.

The history of DAAE began in 1969, when the Autonomous Service was preparing to take over the responsibilities of the Works Department of the municipality's city hall. At that time, the city had a population of less than 60,000 and was already facing serious water supply problems.

Araraquara is partially located on the renewal area of the Guarani Aquifer, one of the largest reservoirs of underground water on the planet. Assuming this environmental responsibility, DAAE participates in the administration and environmental recuperation of the aquifer's recharging area.

DAAE developed a master plan on water resources, to last until 2015. The plan intends to maintain the current water reception, storage and distribution systems, while improving the supply conditions through installation of new equipment, automation of service, reduction of operational costs and energy consumption.

The Autonomous Service is trying to reduce physical water loss, combat water waste, stimulate the reuse of pluvial water, motivate substantial users to install their own supply and effluents treatment systems. In addition the service plans to recuperate spring areas, increase the quantity and quality of water, preserve and recuperate the aquifer's recharging area and eventually, drill four or five more wells for the completion of the water supply system and thus guarantee operational sufficiency.

The water collection points of the municipality have the potential to meet the demands of the city for the next 15 years. Water is collected from superficial springs and wells. Of the 15 collection points, three (Cruzes, Anhumas and Paiol) are superficial. The rest are wells, with daily capacity ranging from 870 to 6,422 cubic meters of water.

Prior to the Federal Government's Decree no 5.440/05, which legislates that the providers of water and sanitation services should inform the consumers on water quality, DAAE provided information on water quality parameters in the consumer's bill since 2003.

Micro-measurement

The sustainability of DAAE's services is based on the monitoring practice of water consumption. The substitution of hydrometers allows better control and guarantees the financial viability of the system. The switch to hydrometers follows Order n° 246/ 2000 of InMetro. Periodic checks are carried out on hydrometers in use and at five year intervals, at the most. DAAE replaces hydrometers every five years or after 2,000 m³ of water consumption. The maintenance fee is equal to the value of the hydrometer and the consumables used in the installation and gauging. The Autonomous Service uses two gauging instruments certified by the Institute of Weights and Measures (IPEM) following the norms of InMetro, and specialized technicians for gauging hydrometers.

"Before implementing the projects, we identify the potential participants, we analyse the legal parameters, or else, the legal framework, and then we think about the funding mechanisms", notes the director of DAAE, civil engineer and Professor of UNESP's

Sewage service with its own resources

The urban area achieved complete treatment of the collected sewage. The Sewage Treatment Plants of Araraquara and Bueno de Andrade have a combined treatment capacity of 920 litres per second. The Sewage Treatment Plant of Araraquara has two units including the Aerobic Pond, Sedimentation Pond and Sludge Pond. The Sewage Treatment Plant Bueno de Andrade uses the aerobic system of activated sludge. The two ETEs were built using resources from the Autonomous Service.

The Sewage Treatment Plant-raraquara, whose construction began in December 1998, commenced operation in October 1999. It was planned through a concept study that was developed in July 1996 by a specialised company contracted through bidding process. That study analyzed three different treatment possibilities. Besides treatment types, the study considered various factors, such as: installation area, energy consumption and maintenance cost, among others.

The concept study considered technical and financial viability, the technique involving aerobic ponds, followed by sedimentation ponds, and planned the construction of a single Sewage Treatment Plant with 14.9km of interceptors, which permitted the station to be placed far from the urban area of the municipality. The Sewage Treatment Plant currently treats 100% of the sewage collected in the city.

One of DAAE's priorities is the redesigning of the Sewage Treatment Plant-Araraquara, in order to increase treatment efficiency by reducing electric energy consumption, while monitoring its environmental impact.

DAAE received the certification ISO 9001 for water and sewage treatment in November 2004 and February 2005. The moderate tariff policy is one of DAAE's points of pride. As the superintendent of DAAE Araraquara, Wellington Cyro de Almeida Leite (in the picture), points out, "even performing investments with our own resources, the tariffs remain the lowest compared to other cities of the same size".

Inclusion

In order to recover degraded areas in the margins of watercourses and comply with the Environmental Recovery Terms of Commitment (TCRA), released by the state's Department for the Protection of Natural Resources (DEPRN), DAAE uses labour from detainees of the Male Rehabilitation Centre of Araraquara, for the maintenance of areas where 7,200 seedlings of native trees were planted.

This extraordinary partnership required the clarification of a municipal law to define the terms of the agreement, jointly with governmental and non-governmental entities, for the development of the rehabilitation project, through the Protection and Community Help Association. According to the Detention Code (LEP) regarding

The Centre of Education and Environmental Sanitation (CESAMA) was built in 2003, through a partnership between city hall and DAAE. There is a teaching laboratory for practical classes and a research centre. It has a capacity of 30 people and promotes educational activities for environmental sustainability.

Social Fund

In 1999, the Advisory Council of DAAE created through resolution a Social Fund, outlining the conditions necessary to end cronyism in the evaluation of the user cases when unable to repay their debts.

The collection of an additional 1% in tariffs on all water bills is used to pay off debts of consumers with proven inability to repay, with monthly family income up to three minimum wages, unemployed or sick people. The Social Fund functions as a public savings account by redistributing public resources.

By incorporating such a preventive mechanism, delinquency stops burdening the service and is covered by DAAE's savings that is kept in a specific account subject to the inspection by the Court of Auditors.

In just three years of operation, the Social Fund assisted 926 consumers, covering more than R\$ 224,000 in debts. According to the director of DAAE, "the majority of the society that contributed this 1% of the tariffs to the Fund agreed with it. That soothes social problems without having to cut water supply, especially when it has to do with families without the ability to pay".

Penalty Redemption, each three working days count for one less detention day instead of receiving daily remuneration for the work.

As Simone Cristina de Oliveira, responsible for DAAE's Environmental Department, points out, "the recovery of ciliary forests in permanent protection areas is costly and requires constant maintenance".

Furthermore, in order to reduce costs, a significant part of the cost for seedlings of native trees was covered by donations to DAAE from sugarcane and alcohol companies, which represents one of the main industrial activities in the area.

Integrated waste management

DAAE has achieved a level of technological and institutional development that strongly distinguishes it from other companies. Since 2003, the Autonomous Service assumed the integrated administration of the urban waste of Araraquara, guaranteeing appropriate health conditions and control of domestic waste and public and private hospital waste. The collection is still the responsibility of the outsourced company. To meet this challenge, DAAE has been investing resources close to R\$ 800,000.

Part of this money was invested in the recycling plant. The R\$ 200,000 invested by the Autonomous Service saw the increase in the number of workstations created by former garbage collectors from 16 to 52. These workstations, which are managed by the Cooperative Acacia, provide alternative jobs for the collectors and their families, thus assisting their social rehabilitation and improving their incomes, professional qualification and health and work conditions.

The members of the cooperative are attended to by the Municipal Secretariats of Health; Social Inclusion and Citizenship; Education and the Coordination of Equal Popular Participation. Vaccinations, family health programmes, projects against drugs and alcoholism, alphabetisation and worker safety were all services provided by the various secretariats.

The monthly cost for the operation of the embankment has reached R\$ 250,000. The whole area is 70,000 square metres. The municipality strives to meet the norms of the Company of Environmental Sanitation Technology (CETESB) and of ABNT. The municipality installs methane gas capture systems, pluvial water drainage systems, leachate treatment ponds and plants the slopes and the surrounding areas with appropriate vegetation in an effort to meet the CETESB standards.

Last June, DAAE inaugurated the Hospital Waste Treatment Centre to serve Araraquara, which produces an average of 40 tons of waste per month, not including the waste produced by six other cities in the area.

The incinerator is a unique project that was developed by a research team of USP - Sao Carlos, through a contract with the Foundation for Research Development and Industrial Improvement (FIPAI).

An example for the area follows. The incinerator has environmental protection equipment, such as wet scrubbers for acid gases generated by the combustion process. The residues are incinerated at 1,100 degree. The incinerator operates on an experimental basis with a temporary license granted by CETESB. The incinerator will undergo testing and be inspected by environmental authorities analysing the efficiency of the incineration. The equipment has a treatment capacity of 100 kilos per hour, which is enough to process the 1.6 tones of hospital waste generated in Araraquara and the neighbouring municipalities.

The director of DAAE estimates that only the maintenance of the residues' final disposal system costs the Autonomous Service R\$ 350,000 per month. "If the operation of the embankment was outsourced, the cost would be double", informs Wellington Cyro. To deal with these expenses, DAAE drafted a law instituting a tariff based on the volume of solid waste produced per residence. "The users should declare, through individual questionnaires, the volume of solid waste produced daily. To achieve this, we will estimate the capacity of plastic bags, usually used for

garbage, such as the supermarket plastic bags. The residences participating in the selective collection will benefit from reduced tariffs on garbage collection”.

Rural producers participate in the project for the final disposal of pesticide containers

Federal law 9.974/00 demands the producers devolve and the suppliers return the pesticide containers. This law has strongly impacted the municipality of Araraquara.

The Law required the suppliers of such products to indicate special places to receive and safely store the material until it can finally be disposed.

The Public Authority, concerned with the issue, invited the interested parties to identify a location for the reception of the containers. The municipality offered an area with appropriate infrastructure for the construction of the depot and in exchange, achieved the participation of producers and suppliers with resources for the work. Furthermore, with the resources collected by the group, a campaign was launched to inform the interested parties on the depot and instructions on how to use it.

The depot was built in November 2001 and is currently operating. It is a receiving point, where all the movement of containers is controlled with receipts and protocols. The empty containers are forwarded to the central collection point in the city of Guariba, SP, about 60 kilometres from Araraquara. From there, the containers are sold to and recycled by manufacturers for electric cables.

Settlements are a significant challenge

Araraquara is not a big municipality and includes the Bueno de Andrade district, with around 500 inhabitants, already relying on the water supply, collection and treatment of sewage for close to a decade. The Sewage Treatment Plant of Bueno de Andrade was initially an experimental project supervised by the USP's Engineering Faculty of Sao Carlos.

Sugarcane and oranges are the base of the agriculture production of the municipality. For the fieldwork, rural workers are contracted.

According to geologist Julio Cesar Arantes Perroni, planning coordinator of DAAE, “our biggest challenge is to provide water and sanitation services to the population of the two rural settlements of Araraquara”.

The settlement of Monte Alegre, under the responsibility of the Land Institute of the State of Sao Paulo (ITESP), hosts 428 families. It is situated between the municipalities of Araraquara, Matao and Motuca.

In the settlement Bela Vista, created 17 years ago by the National Institute of Colonisation and Land Reform (INCRA), DAAE operates two wells and the water distribution system. There are all sorts of environmental problems, besides the destruction of ciliary forests that compromise the water quality and quantity. The release of pesticides in the springs is also contributing to the deterioration of the waterways. The family health centre registers indexes of gastrointestinal diseases as higher than in the urban area of the municipality.

Three years have passed since DAAE started installing sewage collection networks, but the population decided not to pay tariffs for the service. Julio Perroni affirms that, “INCRA offered to cover around 80% of the entire cost. The rest would be paid by DAAE as counterpart funding. We were negotiating with the settlers on a tariff lower than the social tariff, which is the lowest in the urban area, but we did not succeed. The Participatory Budget's Coordination is reviving the dialogue with the population, so that we can implement the sewage treatment project, construct a reservoir and install hydrometers”.

Inside the Bela Vista settlement there is a farm managed by the settlers themselves, supplied with raw water collected from the springs, which are subject to all kinds of contamination and malpractice.

DAAE/ARARAQUARA, SP

In the Monte Alegre settlement the problems are even worse. Similarly, to Bela Vista many of the lands of the land reform programme were leased by the settlers for the planting of sugarcane for the sugar and alcohol production plants.

With the collaboration of Sonia Cassoli