

## 2. Abstract

Title: Elaboration d'un schéma directeur pour Acqualatina

Author: Virginia Vidal Lescuyer

Tutor: Joan Garcia Serrano

Both Italy's new laws and the obligation of following European directives justify the need of an enormous investment in the existing installations. The first part of the work is about the evolution of the Italian laws since 1900. It also considers the geographical issues of the current management, the hydrographic and political divisions inside the Province, and the regional assets of water protection.

The second part of this work exposes Latina's particularities inside Italy, such as the very particular type of land Latina has: the northern half of the Province used to be a morbid marshland that has been tried to be dried since the Roman Antiquity.

After seeing the general topics about Latina, the distinctiveness of the different systems we can find in the Province will be presented. Gaeta, a quite important city from the military and industrial (Agip refineries) point of view, illustrates a typical case of the problem in Latina. Gaeta is particularly interesting because of the great proportion of Bourbon sewer, which makes the management and the seawater infiltration control a bit difficult.

The next point is about the Masterplan itself. Veolia Water, the French society who is Acqualatina's major actionist, is working on the optimization of the investment plan. On this purpose, a Masterplan was launched in 2004, which goal is to balance the distribution of the funds. The Masterplan is composed of different parts: drinking water, unarsenization (a minor and urgent part), and wastewater (mostly nets). The wastewater Masterplan has two components: prospecting and a measure campaign. Prospecting is a key step because it allows knowing better the net, how it's working and identifying its black points. Thanks to the prospecting it has been possible to identify most coastal cities as black points, due principally to the promiscuity through sewer net and rainwater net and to groundwater infiltrations. Rationalization of the investment plan (for the wastewater part) would consist in acting on the most sensible promiscuity points.

The final part of the work is about the second step of the Masterplan: the measuring campaign. The campaign was done in seven cities, and each city was divided into at most four hydrographic urban basins of similar size, and a relatively important pumping station was taken as an exitory of each basin. All the pumping stations of the campaign were equipped with Doppler-effect flowmeters that allowed the team to get 24h flow data. During the measure, each flowmeter has been connected 24 hours to an automatic sampler. Samples have been analyzed, so it has been possible to get the values of DCO, DBO and Solids for each hour. These data have been used in empiric formulas that provide the percentage of infiltration water for each studied basin.

We obtain, as a result of this campaign, the hypothetical flows of clear water in the sewer net. In the coastal places, conductivity measures have also been done to try to find out whether the water infiltration was of a marine origin or not. Once the clear water flows are established, it is possible to set an urban basin hierarchy based on the need of a further detail study. The sites that have given as a result more than 50% of clear water (as an average on 24h) are spotted as basins that need to be studied more deeply, and on which actions of impermeabilization have to be done: those actions could be the solution to the dilution in processes of water cleaning, and to the saturation of the nets. Thanks to those data, it is possible to reach Veolia's principal asset: redistribute time and investments.