



# Technical

# Discussions



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TECHNICAL, FINANCIAL, AND ADMINISTRATIVE ASPECTS OF WATER  
SUPPLY IN THE URBAN ENVIRONMENT IN THE AMERICAS

PRESENT STATUS OF THE WATER-SUPPLY AND SEWAGE-DISPOSAL  
SERVICES IN THE REPUBLIC OF CUBA

## Introduction

As every one knows, the Republic of Cuba has just been liberated from a cruel dictatorship, to which it had been subjected for seven years. During that time, no planned effort was made to solve this problem. The only plan carried out in Cuba in connection with potable-water supply systems was in 1950-1952, when waterworks were built for 13 communities and improvements were made in as many more that had already been built. Before and after that period, only isolated work was done and this was due mainly to the pressure of public opinion in specific cases. One of the most neglected subjects in our country during the last seven years was statistics. It is for that reason that data on Cuba is missing from Dr. Abel Wolman's excellent paper.

The very first thing we did this year was to prepare statistics on the situation, which although preliminary, give a realistic appraisal of the magnitude of the problem. It is from that first report that we take the following information:

\* The distribution of population according to size of communityGroup

** A. Cities with more than 100,000 inhabitants	-	4
B. Cities with 25,000 to 100,000 inhabitants	-	16
C. Towns with 5,000 to 25,000 inhabitants	-	63
D. Towns with 1,000 to 5,000 inhabitants	-	<u>217</u>
	Total	300

Urban centers with and without waterworks

<u>Group</u>	<u>Total with waterworks ***</u>	<u>Total without waterworks</u>	<u>Total</u>
A.	4	-	4
B.	15	1	16
C.	35	28	63
D.	<u>60</u>	<u>157</u>	<u>217</u>
Total	114	186	300

Background

Waterworks in Cuba can be divided into three classes (from the standpoint of ownership). Some are municipal, that is, constructed by the municipalities with the help of loans, etc., as is the case of the one for the capital, which dates back to 1893. Others were constructed and operated by private companies through concessions, and were later transferred to the municipalities. The rest were constructed and operated by the national government, either by the Ministry of Public Works or by the National Development Commission, a semi-official agency. The three types of operation systems still exist in Cuba, but almost none give efficient service, perhaps as a result of financial difficulties or the lack of proper technical supervision.

As for the sewerage systems, only nine communities in Cuba have such a service; not a single one of them is completely adequate, because some do not cover the urban area completely, while others have either no residual treatment plants or overloaded ones. The situation is as follows:

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\* 1953 Census

\*\* Including the Capital

\*\*\* These figures of communities with waterworks should be accepted with reservation for in reality, although we do not have exact figures, it can be said that only 20 per cent of those 114 waterworks furnish drinking water that has been properly chlorinated, etc. Of that total, moreover, only about 10 per cent furnish 24-hour service.

<u>Group</u>	<u>Communities with sewerage systems</u>	<u>Communities without sewerage systems</u>	<u>Total</u>
A.	3	1	4
B.	4	12	16
C.	2	61	63
D.	<u>-</u>	<u>217</u>	<u>217</u>
Total	9	291	300

### Legislation

Fully conscious of the fact that it is not enough to construct systems but that they have to be operated and maintained under efficient supervision and technical administration that will provide for the necessary expansion as the communities develop, and following the example of Argentina, Venezuela, Uruguay, and Puerto Rico, the Cuban Government enacted the Law of 20 March 1959 creating an autonomous entity, the National Waterworks and Sewerage Commission, whose objectives and functions are quoted below from the law:

- (a) To encourage the establishment of waterworks and sewerage services in all the urban centers of the nation, standardizing the systems, using the water resources wisely, and establishing service standards within present supply and health levels.
- (b) The responsibility of directing and orienting efficient administration, operation, maintenance, conservation, and expansion of the public structures and services set forth in Article 1 of this law. It shall also be responsible for the strict inspection of and supervision over private companies rendering these services.
- (c) Administration, expenditure, and accounting of public funds from the collections it establishes and receives in the performance of its duties and in carrying out the objectives assigned to it by this law, as well as any other financial resources granted it by the State or by official entities for the execution of any public service.
- (d) The setting and collection of all charges, rates, fees, and assessments that the respective consumers are under obligation to pay. To establish and follow up all administrative or legal processes, including the procedure of pressure for the collection of any legitimate debt. The powers granted by the present law may be totally or partially delegated to the administrators of the establishments and services.

- e) The appointment, transfer, or removal of all staff included in the budget and the allocations of the establishments and services referred to in Article 1 of this law.
- f) Preparation of budgets on the basis of funds derived from the gross collections of the establishments, to which Article 1 of this law refers. Such revenues may be utilized to cover all expenses incurred in the operation of the waterworks and sewerage system, including the expenditures required for the maintenance of this Corporation. Such financial reserves as are deemed appropriate may be established or created according to the best interest of the public administration.
- g) The arranging of credit operations of all kinds, whether or not guaranteed by the collections from establishments and services set forth in Article 1 of this law. The only limitation is that these operations and the expenditure of the funds from them shall be first approved by the Comptroller General (Tribunal de Cuentas).
- h) Draw up its own regulations which, it shall submit to the the President of the Republic for approval and promulgation. These regulations will cover everything related to the potability of water, supply standards, regulation of services, rate charges, distribution, and general administrative system.

The Commission will function in much the same way as the Puerto Rico Aqueduct and Sewer Authority. Like it, the Commission has been authorized by law to issue securities, obtain financing, etc., to enable it to carry out the necessary operations, with its own collections as guarantee and the additional guarantee of the Cuban State.

In addition to the example cited of the sister republics, the reasons that led our Government to create a consolidated organization for these systems were as follows:

a) Medium-sized and small communities could never construct a system by themselves. In consolidating the enterprises, it is expected that the profits of the large and more economical systems will be used in behalf of smaller communities.

b) Medium-sized and small waterworks cannot pay the cost of the specialized technical personnel required for the supervision and operation of the services.

c) Watercourses and their natural limits generally do not tally with the political or administrative divisions of the national territory. It is therefore uneconomic to limit the services according to the boundaries of the municipalities, since the services in reality are developed from the watercourses.

d) The varying topographical and hydrological conditions of the different communities make it necessary for the water and sewerage services to charge rates that vary from one place to another. They may be very moderate in some and excessive or beyond the average purchasing power in others. Therefore, in view of the fact that expenditures of this type affect the poor and the rich alike, and that it is necessary to cooperate in the economic and industrial development of precisely those areas **less** favored by nature, it is thought that the rates charged for these services should be made uniform throughout the nation. This can be achieved only by the consolidation of the services.

The Commission is at present operating 30 waterworks and **five** sewerage systems. This covers 32 per cent of the population having waterworks service and 92 per cent of the population having sewerage service.

The law itself provides for the remaining waterworks systems to be brought under the Commission, through agreements between the Commission and the municipalities or the private companies that operate them.

The rest of the waterworks systems serve a population of approximately 1,700,000 persons, of whom 800,000 (32 per cent of the total having waterworks service) live in the metropolitan area of the capital. The remaining 36 per cent are served by some 83 corporations, of which 60 are private by aconed and the rest are municipal.

#### Projects

It has been estimated that the amount of money required to furnish all urban areas with water and sewerage systems is approximately 300 million dollars.

Naturally, that amount should be obtained preferably by financing, since the limited public funds have to be used to cover a multitude of sorely-needed social and economic-development projects, indispensable for our progress, but from which the funds are not directly recoverable.

We plan to accomplish this work in about ten years, at an average annual cost of \$30 million.

The work done by the Commission so far has been to organize the administrative and technical operation of the services. At the same time, it has begun the preparation of engineering projects to repair the existing systems and construct new ones.

The administrative organization of the offices has been entrusted to the firm Barrington International, Incorporated, of New York, which has had extensive experience in these matters, and in addition it worked on a similar phase with the Puerto Rico Aqueduct and Sewer Authority.

From the health point of view, the water of seven of our waterworks has been made potable, by the chlorination of subterranean water in some, and the operation of filter plants heretofore inactive. Of the total 30 waterworks, 25 are now furnishing drinking water.

Two filter plants are in operation and an additional two will be put into operation in the near future. The construction of another will be begun shortly.

As for new construction projects, five new systems have been completed and five existing systems put in working order.

From the economic point of view, we have prepared a study for the establishment of new rates, to be submitted next week to the Council of Ministers and the President of the Republic.

The study of costs made preparatory to setting the new rates revealed that the present average cost is \$1.10 per connection. We plan to install a meter system that, on the basis of the average consumption of 32 cubic meters per connection per month, will produce revenues of approximately \$3.26 monthly per connection. This would make it possible to cover the costs of administration, operation, and depreciation, to amortize the capital, and to pay interest at the rate of 4.5 per cent annually.

The difficulties we are encountering in carrying out the program are of two kinds. One is financial, since the capital investment market in the country is limited and this makes it essential to import capital. The other stumbling block is the lack of a sufficient number of technicians and engineers properly trained in the planning and operation of treatment plants, especially.

We hope, nevertheless, to be able to overcome this difficulty with the valuable cooperation of the Pan American Sanitary Bureau, which we began receiving in May of this year when the first course for treatment-plant operators was given in Havana by PASB experts. We also hope that with the establishment of the new international credit agencies mentioned at this meeting of the Directing Council, it will be possible to obtain the necessary funds to carry out our plans of furnishing all the urban centers of Cuba with adequate systems of water and sewerage.

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Technical Discussions: Technical, Financial and Administrative Aspects  
of Water-Supply in the Urban Environment in the  
Americas

REPORT OF THE RAPPORTEUR

(To be distributed shortly)

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