

# Development of Reservoir Management Optimal Rules: Case of Hammam Boughrara Dam, Wilaya of Tlemcen, Algeria

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## 1 Introduction

Worldwide, more than half of the drinking water is extracted from rivers or from reservoirs built along their banks [14]. The development of dam reservoirs management policies can be a delicate issue because of various reasons: the variation and uncertainty of liquid flow to the reservoir; water releases are not by water only, but also depend on the level of water in the tank; the release period (the season); regularization of the tank mode (annual or inter-annual),... etc. [9] summarized other reasons.

The optimization algorithms aim to determine the values of decision variables that maximize or minimize an objective function under constraints [15]. Several methods have been used to solve the problem of management of dams. Several methods have been used to solve the problem of management of dams. Asmadi [3], Labadie [10], Wurbs [15], Yakowitz [16] and Yeh [17], suggested a review of these methods.

With 59 hm<sup>3</sup> of regularized annual volume, Hammam Boughrara reservoir presents a potential in water resources management in the region. Its role is to satisfy the water needs of Maghnia city (approximately, 154,000 inhabitants in 2012), irrigation of Maghnia agricultural perimeter (about 6000 Ha) and strengthening of the drinking water supply of Oran city (approximately 700,000 inhabitants in 2012).

The main objectives of this study include the following:

Development of management decision plans with a monthly time step, taking into account: the state of water storage in the reservoir at the beginning of the month in question, the random monthly contributions to the previous month and the needs

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