



EXPLORING THE OPERATION OF ATHENS' HADRIANIC AQUEDUCT

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The Hadrianic aqueduct of Athens was constructed in 2nd century AD to satisfy the increased water needs of the city during Roman period. It is a large scale system that includes, among other works, a 20 km tunnel and about 500 wells. It differs from other water transportation projects of that era, as it was constructed entirely subterranean.

The aqueduct collected underground water, mainly from the Parnitha mountain foot as well as other sites along its course. The main tunnel is enriched by lateral aqueducts along its route transporting surface waters from springs of the surrounding mountains. The water was transported by gravity to a cistern at Lycabetus hill and from there it was distributed to the city, through a piping system. The Hadrianic aqueduct of Athens is a paradigm of resilience and sustainability, as it was used almost continuously, during its long history. It was repaired in the end of the 19th century and supported Athens' water supply until 1976.

Today the aqueduct is concurrently an ancient monument, a withdrawn (but still available) water resource and a resilient and sustainable large-scale hydraulic system, worth to be studied for educational and research purposes.

To understand the operation of the aqueduct three main topics must be explored: a) the availability of water recourses, b) the technical characteristics of hydraulic works (tunnel, wells, cisterns etc.) and c) the water consumption of the city in Roman times.

To quantify the available water resources, a hydrological and hydrogeological study of the area was performed. To determine the technical characteristics of the works, extended underground surveying was made and the various data was archived in order to feed hydrologic and hydraulic models. To estimate the water consumption of the Roman city bibliographical research was done to make assumptions on the domestic and also the public uses such as baths and fountains.

During the last years, several actions were done to exhibit this unique hydraulic work to experts and to the public. Among them, the systematic exploration of the aqueduct, the web database development and the hydrological-hydraulic simulation of the hydrosystem, must be mentioned. For these actions, an interdisciplinary cooperation was established among the following stakeholders: the Water Supply and Sewage Company of Athens, three Ephorates of Antiquities in Attica and the National Technical University of Athens.

The main scheduled next steps include the: a) restoration and maintenance works in specific parts of the aqueduct, b) exploitation of water for public use and c) promotion of the project and providing accessibility to specific sites of the tunnel.