Aqueducts, Basins, and Cisterns: The Water Systems at Qumran

The important hydraulic installations at Qumran have often been advanced as a proof of the religious character of the site, where purification rites would have taken place. However, the capacity for water reserves seems modest when compared to other constructions geographically close and of the same period.

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If the nature, functions, and dating of the buildings at Qumran still inspire numerous controversies, the major role of water at the site has never been questioned. The data have been accepted from the very first archaeological, historical, and theological investigations. The hydraulic installations have also lent themselves to understanding the site as an Essene settlement, with investigators identifying a number of places within the water system that might have been sites for ritual purifications. The presence of these ritual sites has made it possible to deduce from texts with very little detail certain purification practices that may have been specific to the sect.

Continuous Water Supply

We now have a sufficient number of comparanda, in the form of hydraulic systems from other sites, to allow us to refine our interpretations of the one at Qumran. We are thus better able not only to examine each element of the hydraulic system at Qumran, but also to analyze water usage in the Near East as a whole at this time.

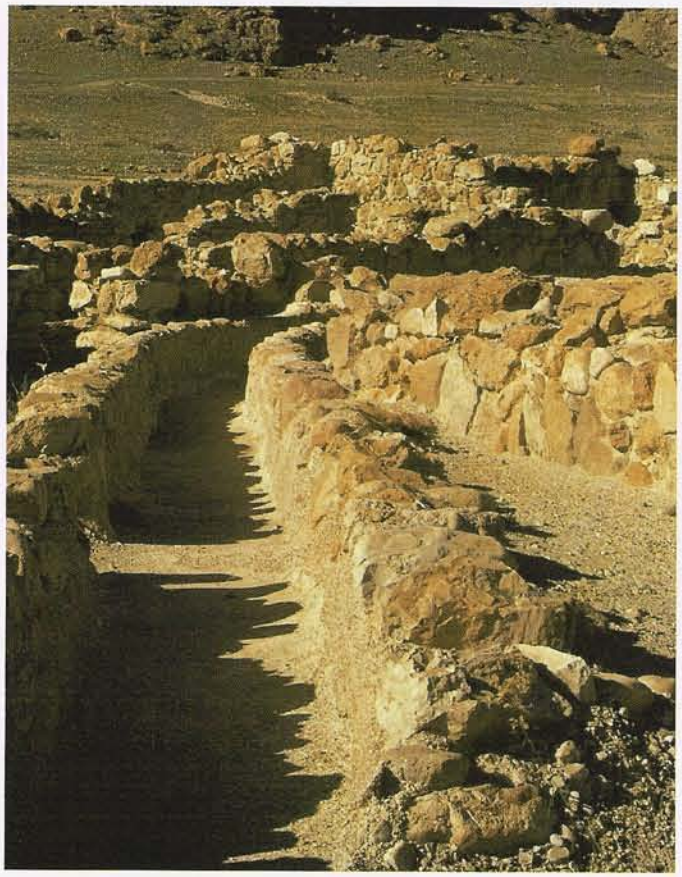
Using the published field notes of Roland de Vaux, we can view Qumran as it appeared at the time of the first excavations. This dossier can be compared with the results of more recent investigations done in Israel and Jordan that have uncovered a good number of aqueducts, reservoirs with stairs, and basins with double staircases at sites of the same period. The discovery of baths of the Hellenistic type, as well as the first models of "ritual baths" in certain Hasmonean and Herodian palaces and later in the homes of certain individuals in Jerusalem, has made it possible to place Qumran in its broader historical context. It can no longer be considered an exceptional establishment, at least regarding the use of water.

Several stages of hydraulic works exist on the site. First, two square cisterns were placed in the vicinity of the round cistern, which dates to the Iron Age. Surface water or rainwater, perhaps collected from the roofs, fed these first cisterns. But, in this semi-desert area, the rains fall from mid-November to mid-March, with the maximum accumulation in December, January, and February. Because precipitation was irregular, varying from 50 to 200 millimetres yearly, the hydraulic system remained rudimentary.

Good Distribution

In a second stage, the volume of stored water was augmented by collecting the surface water better and by constructing an aqueduct (a shallow channel dug in the soil and into the rock). The water came from a gorge between two cascades some twenty meters high, and a path was made for it. The surge of the water flowing over a distance of two hundred meters and a change in level gave it the pressure needed to reach the site. Thanks to the aqueduct, the feeding system became centralized with a large canal that crossed the site and distributed water into new basins or cisterns at various points of the establishment. The storage volume was greatly superior to the first cisterns and allowed for regulation in an ever-expanding space.

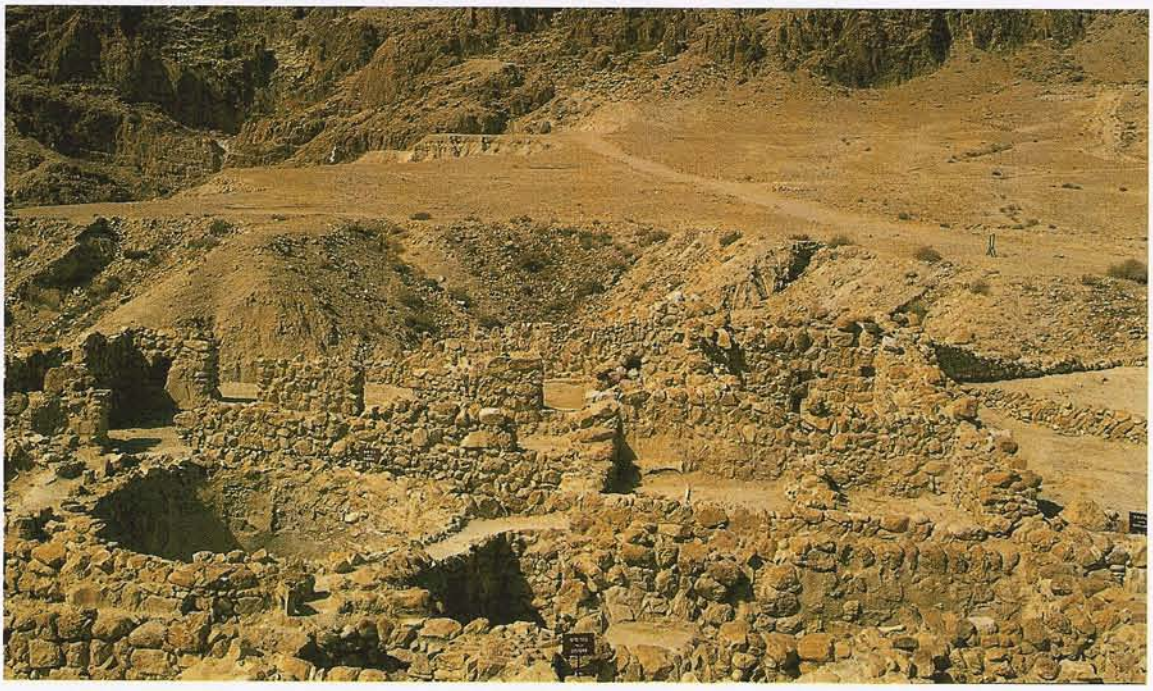
Small jug, dating to the Roman period (first century CE), from the excavations at Khirbet Qumran.



It is possible to formulate all kinds of spiritual and material reasons for this new arrangement: need for purification, or greater need for water for agriculture, "industry," crafts, or ordinary usage. Nevertheless, it is possible to find an identical technique (construction of aqueduct-channel and cisterns with stairs)—and at times a much more sophisticated one (siphon)—in several fortresses in the Judean desert. These latter installations, arranged and renovated in the same period, also have construction techniques and a wall structure similar to those at Qumran.

At Dok (Dox), the only Hasmonean construction that was not renovated by Herod, the aqueduct is 500 m long. The one at Alexandrion conducted water for 1200 m. Cypros, Herodion, Masada, Hyrcania, and Alexandrion had systems for receiving water that were much more complex than at Qumran, sometimes even spectacular. For Qumran, considering the estimated 1000 m^3 calculated in 1955 by Ernest-Marie Laperrousaz, and used in all later research, the installations appear quite modest. Dok, Cypros, or Herodion stored between 2000 and 2500 m^3 of water. In the Herodian period, Cypros had a capacity of 6000 m^3, Hyrcania 16,000 m^3, while the cisterns at Masada contained 38,500 m^3.

The deeper cisterns in these fortresses were reservoir cisterns placed along the canal up to the highest possible point. Water was taken from these reservoirs and brought in the traditional manner (by animal or human) to one or more cisterns in the fortress.



(Top) The channel of the aqueduct (800 m long, bordered and covered with flat stones) has a tunnel 13 m long.

(Above) A long canal system crosses the western part of the site. In the middle, the large round cistern.

Modest Reserves

At Qumran, the volume is much more modest. Water was stored in four large cisterns of 120 to 332 m^3, three cisterns of average size of 40 to 56 m^3, and four basins of about 10 m^3. Other basins of lesser capacity allowed the water to be poured off or diverted from the central canals. The numbers presumably correspond to the need of the inhabitants. Compared with other fortresses, the topography is more agreeable at Qumran: The hydraulic experts of the time succeeded in bringing the water right into the establishment.