

Yarmouk Basin

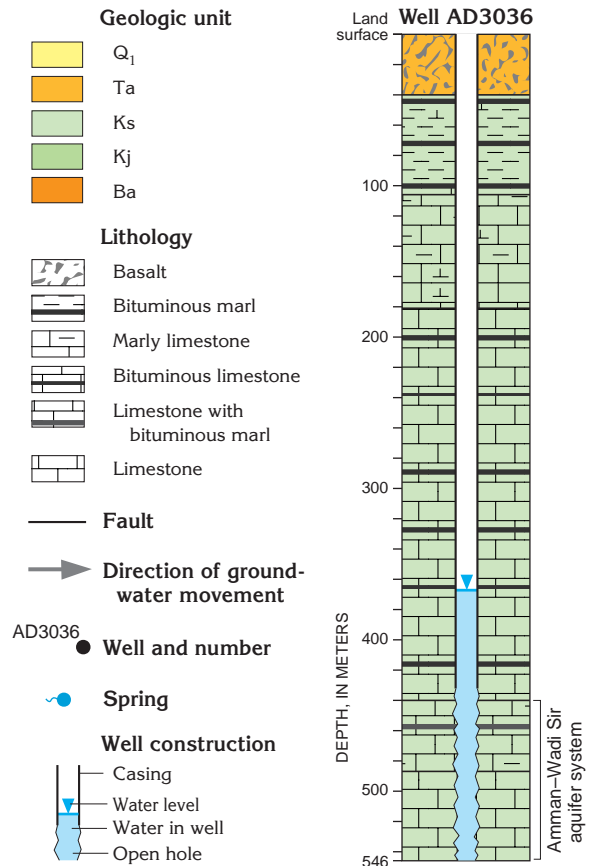
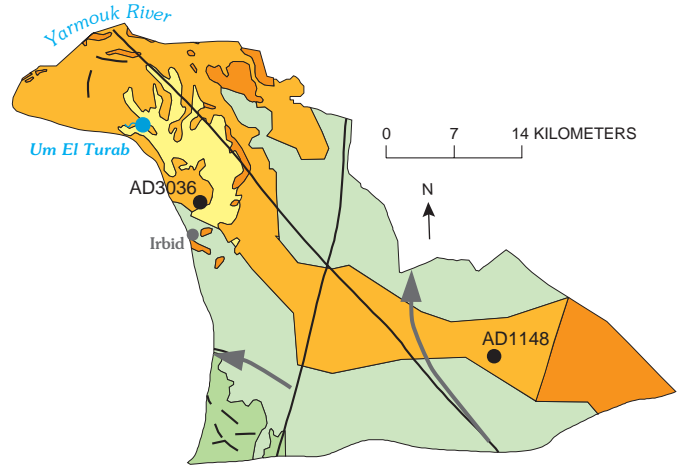


The 1,426 km² Yarmouk Basin is in the northern part of the Jordan Highland and Plateau. The basin is underlain by chalk, limestone, chert, and marl of the Balqa Group (geologic units Ks and Ta) and sandstone of the Kurnub Group (geologic unit Kk). In the eastern part of the basin, basaltic flows cover rocks of the Balqa Group.

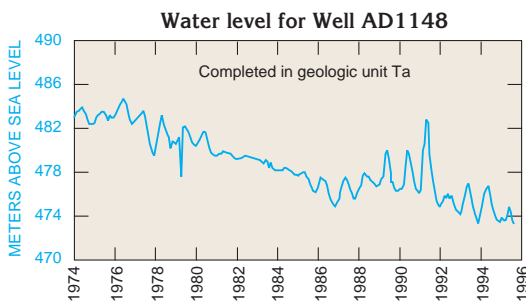
Groundwater is recharged by precipitation at an average volume of 40 MCM/yr. Groundwater flow is controlled by two major faults that cut across the basin—part of the flow is generally northward toward the Yarmouk River, and part is westward toward the Jordan River. The Yarmouk River and groundwater are the primary sources of freshwater in the basin, with 65% of groundwater used for irrigation. Groundwater is supplied to wells and springs by four principal aquifer systems:

- The Basalt system of geologic unit Ba;
- The Rijam system, consisting of limestone and chert of geologic unit Ks;
- The Amman–Wadi Sir system, consisting of limestone and chert of geologic unit Ks; and
- The lower complex, consisting of sandstone, limestone, and dolomite of geologic units Kk, Ja, and TP.

The Amman–Wadi Sir system is the principal aquifer, with lesser amounts of freshwater available from the other systems. Groundwater levels vary greatly in the Yarmouk Basin, ranging from 12 m below land surface near the Yarmouk River, where aquifers are under water-table conditions, to 400 m near Irbid, where the aquifers are confined.



Well AD3036, in the northern part of the basin shows construction characteristics for a typical well completed in the Amman–Wadi Sir aquifer system. The 546-m deep well withdraws water from limestone between depths of 440 and 546 m, with a water level of about 364 m, and an average yield of about 15 L/s.



Groundwater levels in parts of the basin have shown a long-term decline in response to pumpage—levels in well AD1148 declined about 10 m during 1974–95. Because recharge to the basin is about 40 MCM/yr and current groundwater pumpage is about 60–70 MCM/yr, there is a net deficit that results in water-level declines in wells.

The quality of groundwater in the Yarmouk Basin is variable—dissolved solids concentrations range from 300–500 mg/L where aquifers are under water-table conditions, to 550–1,660 mg/L where aquifers are confined.