



Urbanisation of Suweimeh area, Jordan, versus sinkholes and landslides proliferation

Damien Closson (1) and Najib Abou Karaki (2)

(1) Royal Military Academy, Signal and Image Centre, Brussels, Belgium (damien.closson@yahoo.fr, +32 2 742 64 72), (2) Environmental & Applied Geology Dept., University of Jordan, Amman, Jordan

The Dead Sea is a terminal lake whose level lowers each year of about one meter per year since more than one decade. This is caused mainly by the diversion of surface waters from its watershed. Currently, 1/10 of the Jordan River still reaches the salt lake. The rapid lowering of the lake level does not allow all the surrounding groundwater tables to adjust their level to that of the Dead Sea. This imbalance causes an always faster migration of a part of the groundwater causing underground erosion leading to the formation of sinkholes along the coast, especially where discontinuities, such as faults, are present.

The first collapses occurred in the years 1980-90. From the 2000s, in Jordan, they have proliferated to the point of causing serious damages to the facilities of the Arab Potash Company, the agricultural area of Ghor Al Haditha, and more recently the touristic region of Suweimeh. Aware of the problem and the need for gradual rising of the lake level, the Jordanian authorities attended from 2009 to 2011 to the feasibility study of the Red Sea - Dead Sea conduit.

Currently, on the one hand, the growing environmental imbalance, and, on the other hand, the desires to develop economic activities along the coast, imply that more goods will be exposed to damages.

For example, the area of Wadi Mujib Bridge was rebuilt completely in the late 2000s. It is the same for the 12 km of the dam 18 of an evaporation pond Arab Potash Company. The Numeira Salt Factory was completely destroyed in Ghor Al Haditha and was relocated to Safi. In August 2012, during touristic period, a landslide destroyed half of the Holiday Inn front beach, Suweimeh area ... End of December 2012, a team lead by Prof. Najib Abou Karaki warned the Arab Potash Company of the presence of a circular depression 250 m in diameter within the evaporation pond SP-0A. Although the dike of this saltpan is closely monitored, the exact location and shape of this large sinkhole were not known to the security managers.

The frequency and intensity of the damages increase each year and therefore new hazards are expected during this decade.