

## **Abstract**

This study contains hydrochemical data on the Natuf drainage basin conducted between dry seasons of 2003 to wet season of 2005. The Natuf drainage basin located in the western hill of Ramallah district is about 200km<sup>2</sup>. The area contains many springs that emerge from local perched aquifers and outcrops from a limestone and dolomite limestone formations. This study aims to add more information about hydrochemical parameters and the chemical changes in the spring's water between dry and wet seasons and to locate possible sources of pollution and their effect on the water quality of spring's water for domestic and agricultural uses.

The study involved collection and analysis by conventional and available instrumental methods for the hydrochemical parameters of water from twelve springs before and after recharge. Water samples of runoff from two places in eastern and western parts of the study area were collected and analyzed as well.

Most of the springs in the study area are of good water quality for domestic and agricultural uses. Variations in the chemical composition between dry and wet seasons, and from one spring to another, were observed. Springs located near populated areas and close to agricultural activities show higher values of EC, SSP, SAR and TH. These springs contain uncountable colonies of TC and FC.

Trace amounts, within the Palestinian standard limits, of cadmium, chromium, cobalt and lead are found in some springs; while concentrations of iron and zinc that were detected in springs located near populated areas are higher, but within the Palestinian standard limits, than other springs.

Water types of Ein Musbah, Al Alaq and Ein Arik El Tehta are of earth alkaline with increased portion of alkalis with prevailing bicarbonate and chloride in wet and dry seasons. Other springs show variation in water type between earth alkaline with prevailing bicarbonate in the wet seasons to earth alkaline with prevailing bicarbonate and chloride in the dry seasons.

Water genesis in the springs of the Natuf drainage basin is affected mainly by water-rock between water with the mineral phase of calcite, dolomite and aragonite, which are the main constituents of the lithological formations of the recharge area. Water genesis in springs located near populated areas is affected also by mixing with wastewater.