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## EMPIRICAL ASSESSMENT OF POLLUTANT CHARACTERISTICS AND LOADS IN WASTEWATER INFLOWS FROM THE CARWASH SECTOR

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### Abstract

The carwash sector is an unidentified source of pollution that has a significant impact on the environment; furthermore, car wash use a large amount of water during operation. Eight carwash units were selected in Erbil city as a case study to estimate the quantities of water consumed by each type of vehicle commonly used in the city and to calculate total water consumption depending on the numbers and types of vehicles washed at these units. Moreover, the daily volumetric flow of wastewater was determined and its characteristics were studied, analyzing the concentrations of different pollutants for eleven parameters and the size of the annual pollution load resulting from wastewater. Overall, 1.290 vehicles were washed at the eight carwash units; of these, almost 77% were saloons, about 13% were pickups, and 10% were minibuses. The study's eight carwash units recorded daily water usage, which varied from 8.000 to 15.000 l/day. Moreover, the volumetric wastewater flow produced by all the selected car wash units was more than seventy-nine liters; six of these units discharged their effluence into public sewers, while units S1 and S7 used water recycling systems. This study evaluated the wastewater load size expressed via COD, oil and grease, NO<sub>3</sub>, and TSS; the mean annual load for them was about 413, 3, 70, and 981 kg/year, respectively, for all units.

*Key words:* carwash, COD, pollution load, recycle system, volumetric flows

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