

**ANALYSIS OF PHYSICOCHEMICAL AND  
MICROBIOLOGICAL PARAMETERS OF RAWAL AND  
KHANPUR DAMS**



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A thesis submitted to Bahria University, Islamabad in partial fulfillment  
of the requirement for the degree of BS in Environmental Sciences

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## ABSTRACT

Water resources have become increasingly limited, difficult to exploit, and often are exposed to significant amounts of pollutants. Due to increase in population and mismanagement of water reservoirs, these resources are on risk of contamination. An assessment of physicochemical and microbiological water quality parameters of Rawal and Khanpur dams was conducted to determine the water quality of both dams. The main objective of this research was to critically analyse the basic parameters of water which is consumed by the twin cities of Rawalpindi and Islamabad.

Water samples were collected from five different points of the Rawal and Khanpur dams by the months of March and May, 2019 with the furthest sampling points upstream situated at the Korang and Haro rivers entering into Rawal and Khanpur dams. Physicochemical and biological parameters (temperature, total dissolved solids, pH, turbidity, electrical conductivity, chlorides, hardness, total bacterial colonies, salmonella shigella and total coliforms) were analyzed in chemistry lab of Bahria University Islamabad. Despite the increase in parameters concentration from upstream to downstream, most parameter concentrations were within the permissible limits of World Health Organization (WHO).

Results for microbiological analysis showed that water samples contain high microbial counts of different pathogenic bacteria like Coliform, Salmonella and Shigella in Rawal dam as compared to Khanpur dam. It is recommended that regulatory authorities are subject to monitor the quality and quantity of drinking water of the country. It needs immediate attention from government as well as public participation.

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## ABBREVIATIONS

APHA	American Public Health Association
WHO	World Health Organization
CFU	Colony Forming Unit
EPA	Environmental Protection Agency
EMB	Eosin Methyl Blue
SS	Salmonella Shigella
NA	Nutrient Agar
EC	Electrical Conductivity
NTU	Nephelometric Turbidity Unit
TDS	Total Dissolved Solid
PCRWR	Pakistan Council for Research in Water Resources
GOP	Government of Pakistan
UNO	United Nation Organization
WWF	World Wild Fund
EDTA	Ethylenediamine tetraacetic acid

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