# WATER QUALITY ASSESSMENT OF STREAM PASSING THROUGH SECTOR (D-12, E-11 AND F-11) ISLAMABAD FOR NON-POTABLE PURPOSES

A Thesis Submitted to the Bahria University Islamabad in partial fulfillment of the requirement for the Degree of BS in Environmental Sciences


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## ABSTRACT

The current research was conducted to investigate the water quality of stream passing through the sector D-12 including sub-sectors, Golra village, Bhakhra-Ku village, sector E-11 and F-11 of Islamabad for non-potable purposes. For the purpose, water samples were taken from different locations along the length of the stream during the month of October, 2014. The samples were analyzed for different parameters including temperature, pH, flow rate, turbidity, electrical conductivity, color, total solids, total dissolved solids, salinity, dissolved oxygen, chemical oxygen demand, $SO_4^{2-}$ and $Cl^-$ using standard methods. Some of the measurements were done in the field like flow rate, temperature and color. The other parameters were analyzed in the laboratory using the standard methods. The results were compared the standard values of NEQs (National Environmental Quality Standards) and PSQCA (Pakistan Standards for Quality Control Authority).

The results shows that almost all the physical and chemical parameters were found to be in the permissible limits as prescribed by WHO and NEQS of Pakistan except pH, turbidity and TDS at Site 6, 7, 8 and 9. These higher value of TDS, turbidity and pH at site 6, 7, 8 and 9 suggesting the mixing of effluent and waste in a stream. The results of physico-chemical parameters of stream water quality according to current research suggested that there is no potential harm for using this water for non-potable usessuch as, construction of new buildings and roads etc. However, detailed study should be conducted to know the suitability of stream water for crop production.

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## ABBRIVIATIONS

| | |
|---|---|
| APHA | American Public Health Association |
| BOD | Biological Oxygen Demand |
| CDA | Capital Developmental Authority |
| COD | Chemical Oxygen Demand |
| DO | Dissolved Oxygen |
| EC | Electrical Conductivity |
| GDP | Gross Domestic Product |
| MAF | Million Acre Feet |
| MOE | Ministry of Environment |
| n.d | Not Defined |
| NEQ | National Environmental Quality Standards |
| NTU | Nephelometric Turbidity Unit |
| NWP | National Water Policy |
| PCRWR | Pakistan Council of Research in Water Resources |
| PEPA | Pakistan Environmental Protection Agency |
| RBF | Round Bottom Flask |
| SOE | State of Environment |
| SOP | Standard Operating Procedures |
| PSCEA | Pakistan Strategic Country Environmental Assessment |
| PSQCA | Pakistan Standard Quality Control Authority |

| | |
|---|---|
| TDS | Total Dissolved Solids |
| TS | Total Solids |
| TSS | Total Suspended Solids |
| WHO | World Health Organization |
| µS/cm | Micro Siemens per centimeter |
| mg/L | Milligrams per liter |
| $m^3$/sec | Cubic meter per seconds |
| $K_2Cr_2O_7$ | Potassium dichromate |
| $Ag_2SO_4$ | Silver sulfate |
| HCl | Hydrogen chloride |
| $AgNO_3$ | Silver nitrate |
| $BaCl_2$ | Barium chloride |
| $BaSO_4$ | Barium Sulphate |
| $Cl^-$ | Chloride |
| $SO_4$ | Sulphate |

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