

ABSTRACT

The main objective of this project was to assess the suitability of groundwater abstraction for domestic purposes within Hardy area (Karen-Langata area) in Nairobi. Data regarding the identified boreholes within the study area was collected via utilization of existing information and sampling. The water samples were tested to assess their physical and chemical qualities and the parameters were compared to the recommended WHO standards. The target parameters that were investigated and analyzed were Aquifer parameters, Water demand, Geophysics and hydrogeology, and Water Quality Parameters. The borehole yields averaged 4.036m³ /hr. The average total yield and average total water demand (60m³ /day) comparison indicated that the area's aquifer can be relied upon to deliver substantial quantities of groundwater for domestic purposes. The borehole depths averaged 302m. The water rest levels averaged 115.6m bgl. Therefore, together with the hydro-geological findings, it was concluded that medium and deep aquifers exist within the study area. From the geophysics results, it was concluded that part of the strata is fairly weathered and fractured, where thick layers of water bearing zones of weathered and fractured rocks extend from 30m- about 400m below the surface, with the presence of small clayey lenses between the rock strata. The transmissivity values calculated ranged from 0.4038m² /day-7.7025m² /day. Specific capacity values averaged 2.3387m³ /d/m. The standard deviation value of the Transmissivity index, Y, was 0.4823. The transmissivity values averaged 3.0602 m² /day. From Krasny's transmissivity classification results, it was concluded that the area's groundwater potential is suitable for private residential consumption. Therefore, from all these results and findings, it was concluded that groundwater abstraction within the area is suitable hydro-geologically and quantity-wise. The water quality results showed that all the five groundwater samples met the set WHO guidelines, thus groundwater abstraction within the study area was deemed suitable quality-wise for domestic purposes.