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**Water Quality Variations of Villages around Serpentinite Bodies at
Indikolapelessa, Udawalawa**

A PROJECT REPORT PRESENTED BY

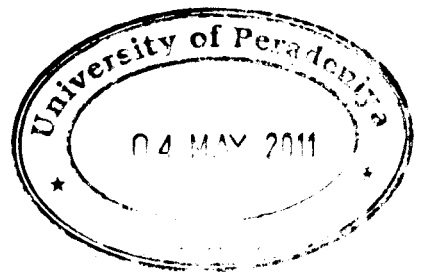
UPEKSHA DULMINI MANAWADU

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Water Quality Variations of Villages around Serpentinite Bodies at Indikolapelessa, Udawalawa

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The Indikolapelessa serpentinite deposit is one of the mantle blocks exposed in the Sri Lankan crust. Possible thrusting of Wannai/Highland blocks over Vijayan Complex may have resulted in the formation of such ultramafic rocks along the boundary zone. Ultramafic rocks are now overlain by iron rich lateritic soil cap. Chromium (0.0220-0.2152%), Ni (0.0043-0.7585%), Mn (0.0571-0.3926%), Mg (0.1226-9.1413%) and Fe (1.764-16.1908%) are enriched in serpentine soils as revealed by previous studies. Low Ca contents in serpentinite rocks ($0.58 \pm 0.62\%$) and soils ($0.712 \pm 0.376\%$) were also reported and it is the characteristic feature of serpentine soils in worldwide.

Water samples collected from different water bodies from tube wells, shallow wells, and surface water bodies at the villages nearby Indikolapelessa serpentinite deposit in Uva Province in Sri Lanka were analysed for pH, electrical conductivity and trace metals to evaluate the possible environmental impacts on the people living nearby villages. The majority of the groundwater in the fractured aquifer (74%) represents very hard water with carbonate hardness in the range $151-600 \text{mgL}^{-1}$. Weathering of anorthite, calcite, and dolomite leads to high concentrations of dissolved calcium, magnesium, and bicarbonate in groundwater. Exceptionally high values of hardness ($>600 \text{mgL}^{-1}$ as CaCO_3) typically occur in currently used dug wells. The hardness of water bodies near Indikolapelessa area is exceptionally high. High Cr concentrations are reported from the tube well samples at $0.01-0.018 \text{mgL}^{-1}$ whereas Ni concentrations are high in the shallow water wells which are identical to the SLS desirable limits of 0.02mgL^{-1} . The high Ni and Fe values recorded above the threshold values in tube wells and shallow wells may be attributed to the serpentinous bedrock and soils from nearby serpentinite body. People from Indikolapelessa village are not badly affected from high concentrations of heavy metals in water and soils because sixty two percent (62%) of the people use pipe born water for domestic uses, which is originated from *Maw Ara*. Trace metal concentrations of water from *Maw Ara* is below the tolerance limit although Fe and Al levels were measured as above average. However, some trace metals (Ni & Cd) may be added to the water supply by unprotected shallow wells constructed for distribution purpose throughout the villages. Since people do not boil water before drinking, few people in the area suffer health effects with high hardness in water. Further studies on socio-economic factors of these results are required to substantiate the conclusions and recommendations made in this study.