

Characterization the Gem Bearing Sediment Deposits Using GIS Technique in Kalu-Ganaga River Basin, Sri Lanka

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Sri Lanka is well known for supply of most valuable of gemstones in the world, and dominated by varieties of corundum; spinel, garnet, beryl, tourmaline, topaz, and zircon. The most popular and main gem mining fields fall in Rathnapura and Elahera areas. In most localities, gem minerals are recovered from residual alluvial and eluvial deposits, though deposits of hybrid origin are also common. The gem deposits are predominantly associated with river flood plains and paddy fields. There are masses of gravel and other residual or detrital materials that have been concentrated by weathering and mechanical processes. The gem bearing beds in the Rathnapura areas are mostly alluvial in origin and these quaternary gravels beds are inter-layered with silt, clays and lateritic beds. Angular rock fragments are also present in the gravel and in residual deposits. The gem deposits of Sri Lanka have been studied by many previous workers (Adams, 1929; Coates, 1935; Wadia and Fernando, 1945; Wells, 1956; Cooray and Kumarapeli; 1960; Cooray; 1967; Katz, 1969, 1972 a ; Silva; 1976; Dahanayake *et al.*, 1980). Most of these studies were mainly focused on to determine mode of occurrence and sedimentary environment. But the present study was mainly aimed to characterize gem bearing beds with respect to source and distribution within the basin. In this study, present gem deposits/ beds were mapped and collected data on characteristics of gem bearing gravel layers, their association and gem potentiality etc. Finally spatial data base was formed using GIS tools and model the distribution and characteristics of gem bearing layers. The results show number of layers have gem bearing layers. Mainly confined to Pelmadulla area gem bearing layers are located in special variation pattern.

Key words: Gem beds, Alluvial gem deposits, spatial data base, Modeling