

**SOME VERTICAL CONCENTRATION CHARACTERISTICS OF TRACE ELEMENTS
IN GEM-BEARING SEDIMENTS IN THE MAIN GEM FIELD OF
HATTOTA AMUNA, SRI LANKA**

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Sediment samples were collected from vertical profiles of several gem pits in the Hattota Amuna, a prominent gem-bearing area, 14 km south of Elahera. Samples were collected at about 0.5 to 0.6 m intervals and nearest samples to the surface were 0.6 m below the ground level. Samples of the weathered bed rocks (Malawa) lying just below the sediments were also collected in some pits. A total of about 25 sediment and weathered rock samples from four gem pits were collected for this study.

Samples were dried, sieved and the fine fraction (< 0.33 mm) was further ground to less than 70 microns to make pressed pellets for X-ray Fluorescence analysis. Quantitative analyses were carried out for 25 elements. It was found that in all the studied gem pits, there was a downward decrease of La, Ce, Th, Cr, Y and Co concentrations. Calcium and rubidium also showed the same trend. Barium and vanadium showed an increase in concentration with depth. It was noted that where there were sudden changes (e.g. increase of the concentration) a gem-bearing layer (illama) was often found.

When compared to the weathered bedrock, the sediment samples contained higher concentrations of La, Ce, Th, Zr, Cr, Pb, Al and Ba. In the case of Mg and Fe however, the weathered bed rock had higher concentrations. In one pit a large pegmatite was found underlying the sediments and is anomalously rich in U, Th, La, Ce, Zn and Ba.

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