

Prospecting sand resources suitable for construction industry, off Galle, Sri Lanka

T.B.D.T. Samaranayake*

National Aquatic Resources Research & Development Agency (NARA), Crow Island, Colombo 15, Sri Lanka

Sand is one of the major aggregates in the construction industry. The accelerated development in construction industry lead to the depletion of inland sand reserves and excess mining of sand arouse many environmental issues. Offshore sand is identified as a promising alternative for river sand. The objective of this study was to prospect offshore sand resources from Galle to Rathgama area. Thirty surface sediment samples were collected and analyzed for grain size distribution, statistical and textural parameters as they are important determinants of different construction aspects. The samples were then analyzed for other parameters; shell content, chloride and heavy mineral content. The mean grain size varied between the range of 0.073 mm to 1.25 mm while the median (D50) was in between 0.07 mm to 1.8 mm. Both the mean grain size and the median were in the recommended range according to British Standards limits. The majority of the samples were found to be moderately well sorted which is suitable for the construction industry. A distinct band of sand was identified and the length and width of the sand band were ~7 km and 1.5 km respectively. The deposit was located 1.5 -3 km from the coast and the depth was 12 m to 28 m indicating the deposit can be exploited according to dredging regulations in Sri Lanka. The chloride content by weight was ~0.28% and the shell content higher than 5 mm was below 5%. Though the shell content was in the recommended range according to British Standards, the chloride content was higher than the recommended range. It can be reduced by stockpiling after the extraction and flushing by rain water or artificial washing which might take several years depending on the percentage of chloride. The heavy mineral percentage was 0.12% to 12% by weight. Ilmenite was the prominent heavy mineral found and others were garnet, monazite and zircon. However, further studies should be done to estimate the volume of the deposit.

Keywords: grain size analyses, construction material, offshore sand, chloride content

*Corresponding author - email: thilakshanitbs@gmail.com