

C  
363.7  
417

**DESIGNING THE SANITARY LAND FILL SITE IN THE  
UPPER KOTMALE HYDROPOWER PROJECT AREA AT  
TALAWAKELE**

A PROJECT REPORT PRESENTED BY

CHAMINDI NILUSHA BANDARA WIJERATNE

To the Board of Study in Environmental Science of the  
**POSTGRADUATE INSTITUTE OF SCIENCE**

*In partial fulfillment of the requirement*

*For the award of the degree of*

**MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE**

of the

**UNIVERSITY OF PERADENIYA**

**SRI LANKA**

**2005**

**590988**

# **DESIGNING THE SANITARY LAND FILL SITE IN THE UPPER KOTMALE HYDROPOWER PROJECT AREA AT TALAWAKELE**

**C.N.B. Wijeratne**

Postgraduate Institute of Science,

University of Peradeniya,

Peradeniya, Sri Lanka

With an increasing international concern for safe and sanitary management of solid waste, awareness for the management of municipal solid waste in Sri Lanka also expanded dramatically since the late-1990s. But, being a developing country, Sri Lanka still struggles to find technically simple, inexpensive and applicable solution for the solid waste problem that will fit into our climatic, economic and social conditions. With the Implementation of Upper Kotmale Hydropower Project (UKHP) the requirement for a sanitary solid waste management plan for Talawakele town was identified as a priority.

This report discusses a model for improving solid waste management of Talawakele town by integrating of (i) underground geology; (ii) engineering design of the site; (iii) promoting recycling and composting of solid wastes. It also discusses, upgrading an old land fill with appropriate designing.

The waste quantities and composition of the current dumping site was analyzed by a waste characterization study using previous data and on site random sampling method. These analyses showed that the degradable organic component always exceeds seventy percent. Geo-physical investigation (Geo-Electrical sounding) was carried out in three locations to explore the subsurface condition and groundwater level. It revealed that the groundwater level should not be closer to the surface except some places where potential for ground water at the depth of 9.25m. This zone of water bearing fractured rock continue upto the depth of 34m. Field data obtained by Geo-electrical sounding were analyzed by the software IPIWin2, developed by State

University, Moscow and were verified by the Software called Resist developed by US geological Survey.

It can be concluded that a combined method of both composting and land filing will provide a well-suited solution for the solid waste management problem in Talawakele. For the composting a large scale composting method can be followed and for land filling canyon method, with a low cost liner like clay or compacted old waste from the landfill to seal the fractured area, can be constructed The Canyon method is to fill a natural canyon. Each lift starts out the head end of the canyon and ends at the mouth, so as to prevent the accumulation of water behind the landfill. These are multiple lifts. Each lift contains a dumber of daily cells and a final cover over the lifts. A suitable liner, systems of drainage and landfill gas collection should also be installed.

Recycling methods for the other components of waste such as plastics, glass and paper also are recommended which will benefit the society also with many employment opportunities.