EVALUATION OF FINAL DISPOSAL
METHOD AT LADANG LAWEH FINAL DISPOSAL SITE IN
PADANG PARIAMAN REGENCY TOWARDS CONTROLLED
LANDFILL

Name of student : Rofihendra
Student Identity Number : 3308202014
Supervisor : Prof. Dr. Yuliah Trihadiningrum, MAppSc.

ABSTRACT

Solid Waste Management Act of the Republic of Indonesia No. 18/2008 stated that the open dumping method for Municipal Solid Waste (MSW) disposal must not be applied anymore. According to the Government Decree No. 16/2005, the open dumping MSW method has to be changed to controlled landfill. Ladang Laweh Final Disposal Site (FDS) in Padang Pariaman Regency still applies open dumping method. This landfill is a steeply sloping canyon of about 13 m high. Ladang Laweh FDS has been operated since 2003, and planned to have 15 year life span. The MSW was disposed of from the upper part of the canyon downhill by the FDS operators. This operation approach might cause instability of the dumping area and solid waste mound slide.

This study was aimed to evaluate Ladang Laweh FDS operation and to determine action plans for upgrading the FDS to controlled landfill. Methods in this research included measurements of solid waste quantity being disposed of in the landfill, solid waste composition, land capacity, gas emission and leachate generation. Data obtained from this research were used for determining the required landfill facilities. Evaluation of the existing FDS was done according to solid waste standard manual (NSPM) 2007, which was related to controlled landfill method.

The estimated total quantity of MSW being disposed of in Ladang Laweh landfill was 136,614.93 m$^3$ up to 2017. If the MSW reduction effort was applied, this quantity could be reduced to 65,801.46 m$^3$. The Ladang Laweh landfill area of 1.3 hectares was divided into 2 phases. Phase I, which was located inside the canyon, had a capacity of 95,326.37 m$^3$. Phase 1 was divided into 3 dumping zones. Phase II had a capacity of 42,043.20 m$^3$. This Phase was located above the canyon. Every cell in the landfill was planned to be covered with soil periodically, once in 7 days. The leachate treatment facility consisted of anaerobic and facultative ponds for treating 106,6 m$^3$ of leachate per day. Estimation of total biogas product volume was 26.123.011 m$^3$. In order to implement controlled landfill to the existing landfill, some facilities should be provided. These facilities were: lining, leachate collection and treatment units, gas pipe ventilation, drainage system, monitoring well, operation road, dozer, entrance facilities and landfill operators.

Keywords: Open Dumping, controlled Landfill, solid waste generation, landfill facility