

**ALAMANCE COUNTY
SOLID WASTE**

**METHANE MONITORING PLAN
CLOSED LANDFILL
PERMIT # 01-01**

I. INTRODUCTION

The pre Sub-title D landfill operated by Alamance County, Permit #01-01 ceased to accept waste in October 1993. It was capped and closed with official notice of approval by NCDENR in July of 1995. The monitoring probes have been installed per the details of this plan.

II. EXPLOSIVE GAS CONTROL PLAN

Quarterly the Alamance County landfill will monitor the explosive gas at the landfill structures and at or near the landfill boundary. The permanent probes will consist of a plastic stand pipe similar to a piezometer used for groundwater detection. A typical permanent methane probe is detailed in the location drawings. The permanent probe will be constructed at a depth of approximately five (5) to six (6) feet. A 4" diameter hole will contain a one (1) inch slotted PVC pipe. The bottom two (2) feet will be backfilled with non-carbonate pea gravel with a bentonite seal one (1) foot thick above it. The remaining three (3) feet will be backfilled with *in situ* soils. The one (1) inch PVC pipe will be approximately three (3) feet above the existing grade. The PVC pipe will be capped with a one (1) inch PVC cap.

The location and spacing of the methane monitoring probes are somewhat arbitrary. The locations were determined by the relationship of solid waste with property lines and landfill structures. The spacing of the monitoring probes is between 400 and 600 feet. The migration of methane gas is induced by pressure gradients. The methane will move from areas of high pressure to those of low pressure following the path of least resistance. The methane will migrate vertically until it reaches the landfill cap, where it will begin to flow horizontally. This occurs until it finds a pathway out, either by the installed methane collection trenches or migration through the permeable *in situ* soils. Since methane is lighter than air, its tendency is to escape into the atmosphere.

The permanent probes will surround the perimeter of all waste disposal areas and will be located inside property boundaries.

The gas can be detected by use of an instrument that reports the percent of lower explosive limit or by volume. The lower explosive limit (LEL) is 5% by volume; whereas, the upper explosive limit (UEL) is 15% by volume.

Quarterly, a County employee will visit each monitoring point. Using the detection instrument, he/she will determine if methane gas has filled the probes. If the probe is near the property line and methane gas is detected at or beyond the lower explosive limit (100% LEL), it must then be determined if the gas is migrating across the landfill boundary. If the probe is on the boundary or methane gas has migrated beyond the boundary, a remediation plan must be completed by Alamance County.

Other points of monitoring will be the landfill structures. Each structure will be monitored for methane using the following methods:

1. All crawl spaces will be monitored;
2. All corners in the structure will be monitored;
3. Any holes, cracks and pipes through the foundation will be monitored

If methane gas is detected beyond 25% of its lower explosive limit in any structure, check the calibration of the monitor and resample. If the reading is still above 25%, evacuate the building and attempt to find the source of gas. If the source is found, attempt to remove the source. If this fails, a remediation plan is stated in the operational requirements.

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