

## 1.0 EXPLOSIVE GAS MONITORING PLAN

This Explosive Gas Monitoring Plan is designed to address regulatory requirements as set forth in the Rules to detect explosive gases that may be generated by decomposition of Construction and Demolition wastes in the Westside C&D landfill unit. The monitoring plan is designed to detect explosive gases that may accumulate in on-site enclosed structures or migrate in unsaturated soils toward the property boundary.

Attached to this plan is project Drawing LFG1, illustrating the proposed site characteristics relevant to gas monitoring and including the proposed gas monitoring system. As described in the site study permit documents and water quality monitoring plan, the surficial soils above the seasonal high water table have been excavated and removed from the site for historic landfill soil cover use. Sandy clay soil was placed and compacted to construct the landfill base grade and establish a 4' separation from the seasonal high water table. Offset and downgradient or side gradient to the landfill unit, wetlands draining to the adjacent streams limit potential gas migration. The upgradient boundary to the northeast of the landfill unit is the only property boundary subject to gas migration monitoring. No structures are present on the Westside site.

Generally, gas wells are boreholes installed in the landfill to vent or recover landfill gas. For gas monitoring purposes, three gas monitoring probes GP-1, GP-2, and GP-3 are proposed at approximate 500-foot spacing inside the upgradient property line and adjacent Piedmont Natural Gas service line. The gas probes construction will be similar to Type II groundwater monitoring wells with locking steel casings set in a concrete pad, protecting 2" Sch40 pipe, with .010" slotted screen and sand backfill from a depth of 2 feet below grade to just above the observed water table

(less than 15 feet total depth). The top of casing will be slip capped and fitted with a quick-connect, valve or hose barb to connect the monitoring equipment.

The gas probes and any future on-site structures shall be monitored by Wilson County quarterly for the presence of explosive gases measured in % Lower Explosive Limit. The monitoring equipment shall meet industry standards for measuring % LEL for explosive gases and shall be calibrated according to manufacturer's procedures prior to each monitoring event. At least two observations should be obtained for repeatable results at each monitoring location. The sampling location, date, time, staff initials and observed % LEL shall be recorded and maintained in the operating record. Due to the local gas line present along the property boundary, it is recommended that any the total explosive gas concentration be measured to identify the potential sources triggering action. Landfill gas is generally less than 60% explosive gas by volume, where pipeline gas will be greater than 60% total explosive concentration. The following .0544 rules apply to gas monitoring at the C&DLF facility.

- (1) Owners and operators must ensure that:
  - (A) the concentration of methane gas or other explosive gases generated by the facility does not exceed 25 percent of the lower explosive limit in on-site facility structures (excluding gas control or recovery system components);
  - (B) the concentration of methane gas or other explosive gases does not exceed the lower explosive limit for methane or other explosive gases at the facility property boundary; and
  - (C) the facility does not release methane gas or other explosive gases in any concentration that can be detected in offsite structures.
- (2) Owners and operators of all C&DLF units must implement a routine methane monitoring program to ensure that the standards of this Paragraph are met.
  - (A) The type of monitoring must be determined based on soil conditions, the hydrogeologic conditions under and surrounding the facility, hydraulic conditions on and surrounding the facility, the location of facility structures and property boundaries, and the location of all off-site structures adjacent to property boundaries.

- (B) The frequency of monitoring shall be quarterly or as approved by the Division.
- (3) If methane or explosive gas levels exceeding the limits specified in Subparagraph (d)(1) of this Rule are detected, the owner and operator must:
  - (A) immediately take all steps necessary to ensure protection of human health and notify the Division;
  - (B) within seven days of detection, place in the operating record the methane or explosive gas levels detected and a description of the steps taken to protect human health; and
  - (C) within 60 days of detection, implement a remediation plan for the methane or explosive gas releases, place a copy of the plan in the operating record, and notify the Division that the plan has been implemented. The plan must describe the nature and extent of the problem and the proposed remedy.
- (4) Based on the need for an extension demonstrated by the operator, the Division may establish alternative schedules for demonstrating compliance with Parts (3)(B) and (3)(C) of this Paragraph.
- (5) For purposes of this section, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 C and atmospheric pressure.