

including semi-annual testing for non-methane organic compounds and weekly testing at the well heads for methane, carbon dioxide, carbon monoxide, oxygen and nitrogen. Also, if the County undertakes such supplemental LFG collection measures, the County will continuously collect the LFG flow rate from Cell 8 and on a weekly basis determine the LFG flow rate in the plateau area of Subcell 8.4.

B. LFG Control. If any quarterly surface monitoring shows a surface methane concentration that exceeds 500 ppm over the test area plateau or if significant odors are found to be emanating from the test area, the County will take corrective actions (which may include installation and operation of supplemental LFG collection and control technology) as provided in 40 CFR 60.755. Such supplemental LFG collection and control technology may include either passive LFG collection technology (*i.e.* using candlestick flares independent of the existing active LFG collection system) or active LFG collection technology (*i.e.* connected to the existing active LFG collection system). In any event, the LFG collection and control measures (including any supplemental measures undertaken in the area of the Test Area) will be run continuously if sufficient gas is present to sustain combustion, and shall otherwise be operated in accordance with 40 CFR part 60, subpart WWW. If and when the County undertakes such supplemental LFG collection measures, the County will continuously collect the LFG flow rate from Cell 8 and on a weekly basis determine the LFG flow rate in the plateau area of Subcell 8.4.

5. Liquids Monitoring

Each injection device will be fed from a centrally located 6,500 gallon tank truck through a single hose connection. A flow meter will be installed to allow measurement of liquid flow to each injection device. Four control valves will be installed to allow independent flow regulation to each of the injection ports. A central feed location will be used to ease system operations and reduce truck traffic that may affect settlement rates. Finally, precipitation will be recorded via a rain gauge to allow for adjustments to the injection rate. As noted above, at no time will more than 30 centimeters (cm) of leachate be permitted to collect over the liner. The quantity of leachate, and supplemental storm water (if required), added back to the landfill will be measured throughout the life of the project. The County expects to measure recirculation quantities using flow

meters installed on the leachate receptacle just prior to the distribution system piping and valves.

The leachate collection/drainage layer constructed in each subcell consists of two feet of high permeability sand over a geonet drainage layer. Due to the internal subcell slopes and high permeability of the drainage layer, the County expects that there will be very little pressure or "head" buildup on the liner notwithstanding the increased levels of liquids. As noted above, the leachate collection system is designed to maintain a depth of leachate over the liner at all locations within a subcell, significantly less than the prescribed maximum 30 cm depth in a MSWLF constructed with a composite liner under 40 CFR 258.28(a)(2)). Leachate recirculation will be suspended if there appears to be head build-up, and in any event the head would not be allowed to exceed 30 cm under today's proposed rule.

The primary liner system of the Landfill is underlain by a secondary liner and leachate collection system. Sumps are located at the low point of each subcell and are monitored for the depth of liquid on a continual basis. There are double risers extending about 200 feet from the sump in the primary leachate collection layer up to the toe of the side slopes of the Landfill. The double risers provide redundant access to the leachate collection layer. As needed and required, liquid in the sumps is collected and controlled as leachate. Samples are collected to evaluate the characteristics of the liquids. If the test results from the sampled liquid or the monitoring of the leachate level indicate that there is a potential leak in the primary liner system, then the need for a larger pump will be evaluated and the liquid level in the primary system will be further evaluated and monitored to minimize the liquid depth above the primary liner. The liner leakage rate will be evaluated and the leachate injection rate may be reduced, if necessary, to control the rate of flow into the secondary leachate collection system.

Since leachate is pumped from each subcell individually, during the proposed project the County intends to sample the leachate from Subcells 8.4 (test cell) and 8.6 (control cell) semi-annually for parameters that will help establish whether or not leachate quality is improving in Subcell 8.4.

6. Protection Against Landfill Fires

Fires in landfills are usually caused by poorly designed or operated active LFG collection systems that allow ambient air into the waste. For this

project, the LFG collection system will be carefully operated to handle excess gas generated while minimizing the potential for landfill fires. The potential for landfill fires will also be minimized for this project since it is based on the anaerobic bioreactor concept. If quarterly monitoring for surface methane emissions triggers supplemental LFG controls, the County will test any Landfill gas extraction wells installed in the test area on a weekly basis for gases including: methane, carbon dioxide, carbon monoxide, oxygen and nitrogen. The County will carefully monitor for and manage the oxygen concentration in the LFG to reduce the potential occurrence of a landfill fire. The County, MDE and EPA acknowledge that a portion of the closed and capped Cell 5-6-7 has had a landfill fire in the past and have agreed to monitor and control the anaerobic bioreactor testing to ensure this does not occur as a result of this project.

C. What Kind of Liner Is Required by Current EPA Regulations?

Currently, the EPA's regulations outline two methods for complying with liner requirements for municipal solid waste landfills. The first method is a performance standard set forth at 40 CFR 258.40(a)(1). This standard allows installation of any liner configuration provided the liner design is approved by the director of an approved State (defined in 40 CFR 258.2) and the design ensures that certain constituent concentrations are not exceeded in the uppermost aquifer underlying the landfill facility at the point of compliance.

The second method is set forth at 40 CFR 258.40(a)(2) and (b). 40 CFR 258.40(b) specifies a liner design which consists of two components: (1) An upper component comprising a minimum of 30 mil flexible membrane liner (60 mil if High Density Polyethylene (HDPE) is used), and (2) a lower component comprising at least two feet of compacted soil with a hydraulic conductivity no greater than 1×10^{-7} cm/sec.

D. How Were the Liners at the Landfill Constructed?

The liner in the test area at the Landfill was constructed to meet or exceed the performance standard set forth in 40 CFR 258.40(a)(1). The base liner system for each constructed Subcell in Cell 8 is a double synthetic system consisting of the following, from top to bottom:

1. 2-foot protective sand cover over geotextile filter;