

## TenDrain Geonet used as a Leakage Detection System (LDS) under heavy compressive load by Atlantic Waste Disposal, VA

The bioreactor municipal solid waste landfill has over 200 acres, and over 100m in height upon completion. The wastes are brought into this landfill by truck, railroad car and barge, it closes only five days a year. Together with this enormous waste pile is the challenge to manage all the liquids in this bioreactor design. The leachate collection and detection system must be capable of taking huge compressive load and still deliver adequate liquid transmission capacity. Because of the height of the waste, injection pipes will be installed while filling the landfill, this to enhance the bio-reaction to start the decomposition faster. Seven different levels of leachate injection pipes will be installed, with a spacing of 12m vertical direction, and a horizontal spacing of 30m. The injection pipes have a dual purpose and will serve as temporary landfill gas collectors as well.



**The Leakage Detection System (LDS) must be designed to satisfy the following objectives:** Provide rapid detection of a major breach in the primary liner system, common requirements are for 24 hour maximum detection time; and Limit the head acting on the secondary liner to less than the thickness of the LDS or 0.3m, whichever is less. Tri-planar geonet composite provides the most efficient material for rapid leakage detection under normal loads of this magnitude. Geonets have very limited fluid storage capacity and much faster fluid transmission speed than granular soil drain. The tri-planar structure of TenDrain was engineered to maintain flow rates under sustained heavy loads. Transmissivity was measured under 45,000psf for this project with deformable boundary conditions. Its structure is capable of taking such a load at 50,000 psf and still maintaining a 50% thickness.

**Project Name: Atlantic Waste Disposal**  
**Location: Waverly, VA**  
**Products: Tri-Planar Geonet Composite**  
**Application: LDS under Heavy Load**  
**Date: 2000**  
**Engineer: G.N. Richardson & Associates**

