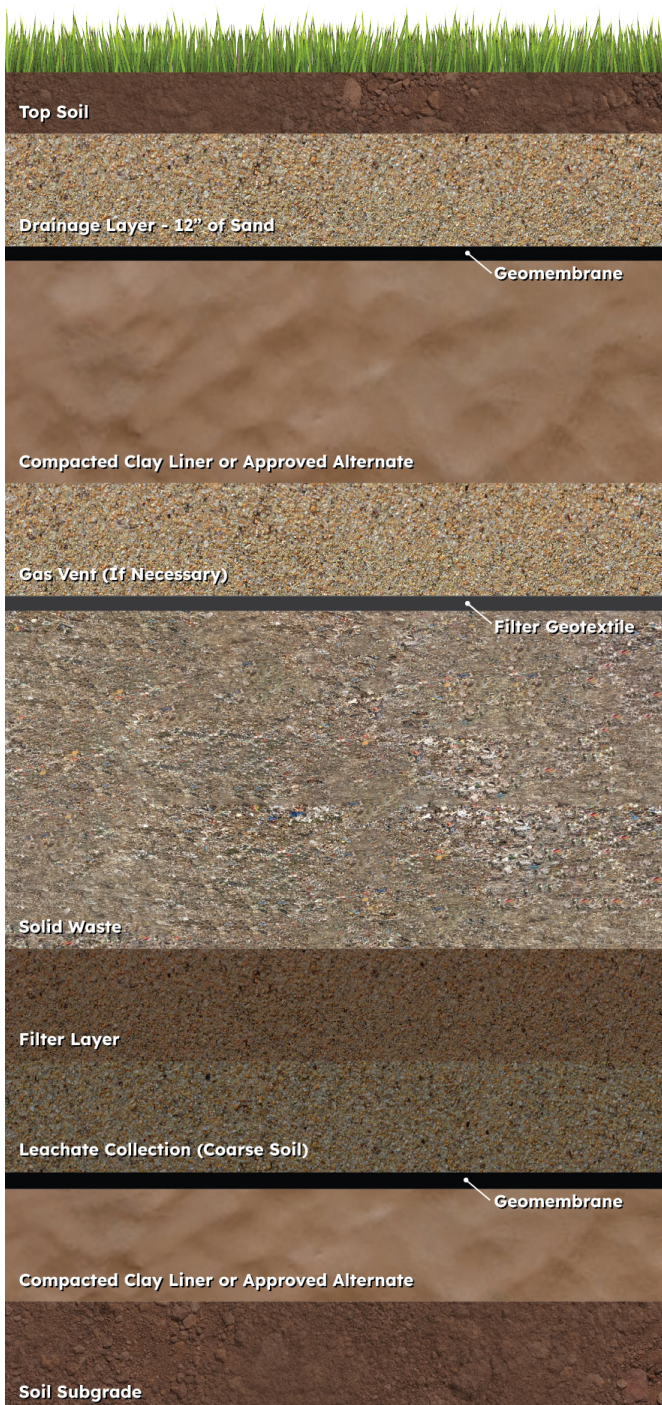
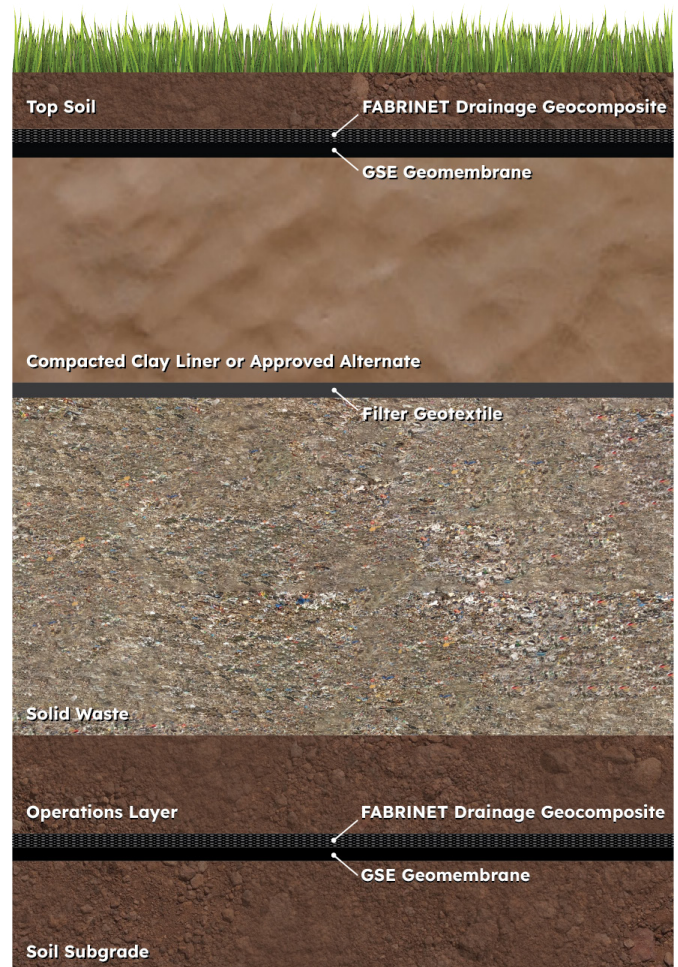


# Drainage geosynthetics replace natural drainage materials

Geosynthetic drainage materials are often used to replace sand and stone in a wide variety of environmental applications. There are many reasons for this.



**Municipal waste landfill without geosynthetics**



**Municipal waste landfill with geosynthetics**

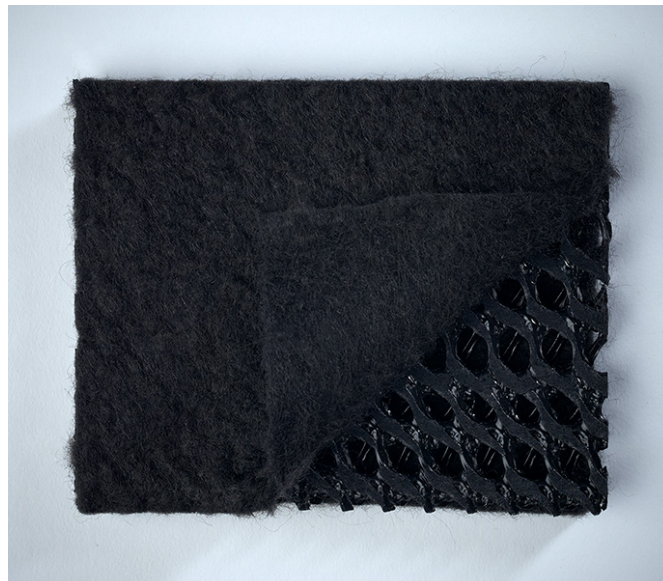
First, the use of a geosynthetic drainage material consumes less air space. Second, the economic benefits of using a geosynthetic drainage material are greater than using the respective natural earthen counterparts. Third, the installation time and environmental impact of a geosynthetic versus natural drainage material is much less.

Air space can be saved by using geosynthetic drainage materials. In a landfill application the air space savings allows for more waste material, which in turn, generates more revenue for the landfill owner.

Usually 12 inches of sand or aggregate is required for a primary drainage layer in a landfill application. Twelve inches of sand or aggregate can be replaced with a drainage geosynthetic, which will reduce the air space consumed up to 98%. For example, twelve inches of natural drainage media can be replaced with 0.200 inches thick drainage geosynthetic, and that will save 11.80 inches of air space. On a volume basis (for 1 acre), this saves 1,591 yd<sup>3</sup>.

By saving the volume of air space consumed by a natural drainage material, this allows the landfill to receive more waste material. More waste material generates more revenue for the owner. For example, if the dumping fee is \$10.00/yd<sup>3</sup>, the revenue generated for the same 1,591 yd<sup>3</sup> is \$15,910. The cost of stone in some areas can be approximately \$1.50/ft<sup>3</sup>. To cover one acre, the cost can be + \$64,429. The cost of a drainage geosynthetic will be a third of that cost.

Using a geosynthetic drainage material also allows for easier installation. Geosynthetic drainage products require less excavation and site preparation which reduces cost. Drainage geosynthetics require, depending on the amount of material needed, one truck that can hold 80,000-100,000 ft<sup>2</sup> of material. Once the material is on-site, typically one loader is used to unload the material and move the material around on site for deployment. An installation crew is on-site to place the drainage geosynthetic panels.



#### **Geonet and composite**

This can reduce the environmental impact on the site because drainage geosynthetics do not require extra heavy equipment, such as rollers and graders, to level out the material.

Using drainage geosynthetics in place of natural earthen materials is a benefit in many ways. Drainage geosynthetics cut down on the time it takes to install a drainage layer when compared to naturally occurring drainage materials. It also saves volumes of space for the consumption of more waste material. More waste material provides more revenue for the landfill owner. Finally, less equipment is needed to install drainage geosynthetics instead of naturally occurring materials, which reduces the environmental impact created on the job site.