

Clay Liner Material Source

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Using natural clayey soil material to line the bottom of a landfill pit is a method of sealing a pit that may have excessively high water transmission capabilities in the soil layer below the excavation. This interpretation shows the degree and kinds of properties that make soil material suitable for use as a clay liner.

The soil is evaluated from the surface to 79 inches. The ratings are based on the soil properties that affect ease of excavation, compactability of the material, the thickness of the soil layer, reclamation of the area, and erosion from the site.

Soils that flood or have a water table within the depth of excavation present a potential pollution hazard and are difficult to excavate. Soils that are shallow to bedrock, ice, a cemented pan, or stones and boulders are limited because these features interfere with the excavation of the site or the suitability of the material. Slope is an important consideration because it affects the work involved in road construction, the performance of the roads, and the control of surface water around the borrow area.

The ratings are both verbal and numerical. Numerical ratings in the table indicate the level of suitability of the soil as a clay liner source. The ratings are shown in decimal fractions ranging from 1.00 to 0.01. They indicate gradations between the point at which a soil feature has the greatest positive impact on the use (1.00) and the point at which the soil feature has the greatest negative impact (0.00).

Rating class terms indicate the extent to which the soils are made suitable by all of the soil features that affect the suitability of soil material for this use. "Good" indicates that the soil has characteristics that are favorable for the specified use. The liner will have good performance and the material will not need any amendments to enhance its performance. "Fair" indicates that the soil has features that are moderately favorable for the specified use. The suitability as a liner may be enhanced by making a thicker layer, or adding bentonite to the soil material used for the liner. The soil may be difficult to work or contain rock fragments. "Poor" indicates that the soil has one or more features that are unfavorable for the specified use. While any material could be used as a clay liner, a poorly suited material will require large amounts of bentonite or other sealing material in order to achieve the expected level of performance.

How to Obtain Interpretations

Soil interpretation maps can be generated for areas up to 10,000 acres at the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) by selecting "Catastrophic Mortality, Large Animal Disposal, Pit" under Waste Management in the Suitability and Limitation of Use section of Soil Data Explorer after selecting the Area of Interest (AOI) and generating the Soil Map.

Soil interpretations for GIS applications can be downloaded from the Soil Data Mart at <http://soildatamart.nrcs.usda.gov/>.

References:

USDA. Natural Resources Conservation Service. 1997. Agricultural Waste Management Field Handbook. Chapter 10. 31 pages.

US Army Corps of Engineers. August 2004. Unified Facilities Guide Specifications No. 023377. 17 pages. <http://www.ccb.org/docs/ufg>