

Memorandum

**Florida Department of
Environmental Protection**

TO: Waste Program Administrators
Solid Waste Engineers

FROM: Mary Jean Yon, Administrator
Solid Waste Section

DATE: April 25, 2001

SUBJECT: Use of One-to-One Mixtures of Mulch and Soil as Cover
Memo # SWM-05.4

The purpose of this memorandum is to document our discussions at the March 21, 2001 Solid Waste Engineer's meeting in Tallahassee on the use of one-to-one mixtures, by volume, of soil and mulched yard trash as part of the final cover at landfills. We concluded this practice can be allowed by the District offices on a case-by-case basis provided the guidelines outlined in this memorandum are followed. We also concluded that, with certain restrictions described below, this practice may be used in final covers at Class III landfills and construction and demolition (C&D) debris disposal facilities and may be expanded to include intermediate covers.

BACKGROUND

This question arose from the proposed closure design of a Class III disposal area at Rosemary Hill Landfill in Clay County, Florida. Since the applicant intends to close this landfill with a clay barrier layer, then Rule 62-701.600(5)(g)2., Florida Administrative Code (F.A.C.), requires the barrier layer be covered with an 18-inch thick layer of soil that will sustain vegetation to control erosion. The applicant desires to replace the soil layer required by rule with a 21-inch thick layer of soil and mulched yard trash, mixed in a one-to-one ratio by volume (hereafter called "mixture"), and then cover this mixture with sod.

The engineer for this project provided additional information for our consideration. Based on some preliminary testing, yard trash mulch generated at the Rosemary Hill Landfill has a density which is approximately 13 percent that of soil. If this mulch is blended with soil at a one-to-one ratio, then the resulting mixture would have an organic fraction of about 0.115, or 11.5 percent, by weight from the mulch (neglecting any organic matter contributed by the soil).

The project engineer also inspected two Class I disposal areas of the landfill that used this mixture over their clay barrier layers. One area was closed in February 1995 and the other was closed in March 1997. Two test holes were excavated in each area. The cover soils in these test holes ranged in thickness from 18 inches to 22 inches, and thus continued to meet or exceed the minimum thickness required by rule. The excavated material consisted mostly of soil with small fragments of wood and plastic bags. The underlying clay was still moist and workable in both areas. The cover grass was generally in excellent condition.

Some anticipated advantages through use of this mixture in final covers are:

- it may help reduce the potential for soil erosion;
- the organic fraction may help the soil retain moisture and provide nutrients for healthier grass growth; and
- healthier cover soils will provide better protection for the underlying clay barrier layer.

CONCLUSIONS

Based on our discussions, we concluded that our rule requiring a soil layer could be interpreted to allow this mixture in the final cover system, or as intermediate cover, for a Class I, II or III landfill, and as final cover for a C&D disposal facility. This decision will continue to be made on a case-by-case basis at the District level, but it was agreed that the following guidelines should be considered in all cases.

1. These guidelines apply only to mixtures of soil and mulched yard trash, as defined in Rule 62-701.200(143), F.A.C., where the soil component constitutes at least 50 percent by volume. They do not apply to other mixtures, including mixtures involving mulched lumber, C&D debris or other vegetative wastes. They also do not apply to the use of yard trash in bedding material below the barrier layer in the final cover of a landfill.
2. While we did not specify a maximum size that would be allowed for the yard trash mulch, it should be prepared using commercially available equipment such as a tub grinder or hammermill, which is operating properly, and the resulting size must not adversely affect its use as cover.

3. If a clay barrier layer is used in a landfill closure, then the mixture should have a minimum thickness of 24 inches and may be placed directly over the clay barrier layer. This extra thickness is necessary to account for the eventual decomposition of the yard trash so that the 18-inch thickness specified in the rule is maintained. The mixture must then be covered with sod or seeded properly for vegetative growth, as required by rule.
4. If a geomembrane barrier layer is used in a landfill closure, then the geomembrane should first be covered with 12 inches of soil. The soil layer should be covered with a minimum of 15 inches of the mixture for a total minimum thickness (soil plus the mixture) of 27 inches, again to account for decomposition of the yard trash. The mixture should not be placed directly on the geomembrane, and it must be covered with sod or seeded properly for vegetative growth, as required by rule.
5. If the mixture is used for closure of a C&D debris disposal facility, then a minimum thickness of 30 inches of the mixture should be placed over the compacted C&D waste, in order to maintain the two-foot cover required by rule after decomposition. The mixture must be covered with sod or seeded properly for vegetative growth, as required by rule.
6. The mixture may be used as intermediate cover provided it has a minimum thickness of 12 inches and will satisfy the other requirements for intermediate cover contained in Rule 62-701.200(61), F.A.C.

MJY/rt

cc: Chris McGuire
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