# Filter Berms

**BENEFITS**

| | L | M | H |
|---|---|---|---|
| **Flow Control** | ■ | | |
| **Erosion Control** | | | |
| **Sediment Control** | ■ | | |
| **Runoff Reduction** | | | |
| **Flow Diversion** | ■ | | |

**Description:** A filter berm is a windrow-shaped (triangular) structure with a specified 'filter material' that normally is a blend of composted materials or other organic products, used to slow flow velocity, capture and degrade chemical pollutants, and trap sediment.

**Typical Uses:** Perimeter control, slope length reduction, flow diversion for small drainage areas, environmentally sensitive areas such as wetlands and waterways, at the edge of gravel parking lots, and general areas under construction.

**Advantages:**
- Less likely to obstruct wildlife movement and migration then other practices.
- Does not always need to be removed, thereby eliminating removal and disposal costs.
- Can be installed year-round in difficult soil conditions such as frozen or wet ground, on hard compacted soils, near pavements, and in wooded areas.

**Limitations:**
- Not suitable for areas of concentrated water flow or below culvert outlet aprons.
- Availability of suitable filter materials may be limited.
- Equipment operators may drive over berms, damaging the product.

**Longevity:** Six months

**SUDAS Specifications:** Refer to Section 9040, 2.03 and 3.06

# A. Description/Uses

A filter berm typically consists of a three-dimensional matrix of biologically active stable composted organic material with various sized particles formed in a continuous windrow fashion (triangular) that slows and filters water to capture sediment and degrade pollutants. Its natural permeability allows water to seep through it while capturing sediment in its pore space and behind its mass, slowing water velocity and absorbing water pollutants, such as hydrocarbons, nutrients, and bacteria.

# B. Design Considerations

1. **Materials:** The key to achieving the proper balance between sediment removal and flow-through rate is using a filter material with the proper particle size. Filter material with a high percentage of fine particles will clog and create a barrier to flow. This will cause water to pond and the pressure may cause the installation to fail. Alternatively, filter material with particles that are too large will allow runoff to pass through the barrier with little or no resistance, eliminating the velocity reduction and sediment trapping benefits of the barrier. Refer to SUDAS Specifications Section 9040 for proper filter material size.

2. **General Guidelines:** Filter berms should maintain a 2:1 base to height ratio to ensure berm stability, with a minimum berm size of 1 foot high by 2 feet wide.

3. **Slope Control:** When installed on slopes, filter berms should be installed along the contour of the slope, perpendicular to sheet flow. The beginning and end of the installation should point slightly up the slope, creating a "J" shape at each end to contain runoff and prevent it from flowing around the ends of the berm. Allowable slope length for compost filter berms is dependent upon the grade of the slope as shown in Table 7E-3.01. For slopes that receive runoff from above, a filter berm should be placed at the top of the slope to control the velocity of the flow running onto the slope, and to spread the runoff out into sheet flow. On steep or excessively long slopes a number of filter berms may be placed at regular intervals down the slope.

4. **Sediment Control:** Filter berms remove sediment both by filtering, and by ponding water behind them. When used for sediment control, filter berms should be located to maximize the storage volume created behind the berm.

   A common location to place filter berms for sediment control is at the toe of a slope. When used for this application, the berm should be located as far away from the toe of the slope as practical to ensure that a large storage volume is available for runoff and sediment.

# C. Application

Compost filter berms should be spaced according to Table 7E-3.01.

**Table 7E-3.01:** Maximum Filter Berm Spacing

| Slope | Maximum Spacing (feet) | Compost Berm Size Height x Width (feet) |
|---|---|---|
| 0% to 2% | 125 | 1 x 2 |
| 2% to 5% | 75 | 1 x 2 |
| 5% to 10% | 50 | 1 x 2 |

As mentioned previously, the material properties of the filter material are a significant factor in the performance of the berm. The wood chip product typically used as a filter material may not be readily available in all areas. This may limit the utilization of filter berms as an economical sediment control option in some areas.

## D. Maintenance

Accumulated sediment should be removed, or a new berm installed, when it reaches approximately one-half of the berm height. If concentrated flows are bypassing or breaching the berm, it must be expanded, enlarged, or augmented with additional erosion and sediment control practices. Additional filter material should be added as required to maintain the dimensions of the berm. Any damage should be repaired immediately.