**Soil Quality Restoration (SQR) for New Lawns- Impervious Surface Runoff Managed**

**Method 6, March 2017**

**Method 6 is intended to be used when there is not enough topsoil onsite and compost is readily available. One inch of topsoil is blended with one inch of compost (for a total of 2 inches) and applied as a surface blanket over 6 inches of tilled subsoil. Tillage is performed a second time to a minimum depth of 4 inches in order to incorporate the topsoil and compost blend into the upper portion of the subsoil to create an 8 inch thick healthy soil profile.**

Applicant\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Location\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Attach copy of Soil Quality Management Plan including site and soil maps.
2. How many square feet will be treated by SQR \_\_\_\_\_\_\_\_\_\_\_SF?
3. What is the drainage area flowing onto the SQR area? (Include the SQR area)

(The drainage area may need to be divided into multiple subwatersheds in order to ensure that the runoff will be distributed evenly as sheet flow over SQR areas.)

\_\_\_\_\_\_\_\_\_\_ ac \_\_\_\_\_\_\_\_\_\_\_ SF \_\_\_\_\_\_\_\_\_\_ % Impervious

1. How will runoff be distributed evenly as sheet flow over the SQR area?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Please attach documentation showing existing soil conditions including description of topsoil to be used.

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Provide a lab analysis or follow these guidelines for the topsoil on site:

* 1. What is the depth of dark brown to black topsoil to be respread? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. After a ribbon test, does the ribbon break off at 1” of length? \_\_\_yes \_\_\_no

(If yes, 25% clay content or less is met.)

* 1. Does the soil break up into granules resembling cake crumbs or small curd cottage cheese? \_\_\_yes \_\_\_no

(If yes, granular soil structure exists and the bulk density criteria is met.)

* 1. Is the B Horizon (layer below topsoil) light brown to yellowish? yes\_\_\_ no\_\_\_

(If yes, non-hydric soils and separation from high water table exist.)

**Table:** Recommended tillage, topsoil, and compost depths for soil quality restoration to achieve an 8 inch deep healthy soil profile.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Method** | **Initial Tillage****Depth of Subsoil****(inches)** | **Topsoil Depth** | **Compost Depth****(Inches)** | **Secondary Tillage****Depth of Subsoil****(inches)** |
| 6 | 6 | 1 | 1 | 4 |

1. Will 1st tillage pass be 6” deep? Yes \_\_\_\_\_\_ No\_\_\_\_\_\_\_\_
2. Identify type of tillage tool(s) to be used. Attach photos of tillage equipment to be used. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Topsoil Depth to be Respread \_\_\_\_\_\_
4. Compost depth \_\_\_\_\_\_\_ Source of Compost\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Percent Organic Matter of Compost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Will second tillage pass be 4” deep? Yes\_\_\_\_\_\_\_\_ No \_\_\_\_\_\_\_\_\_\_
7. If the area being treated with Soil Quality Restoration will give credit for managing runoff from impervious surfaces show calculations for determining that the storage capacity of the treated area meets or exceeds the water quality volume (WQv). Please attach calculations. (See example at end of document.)

Table 6:

* 1. \_\_\_\_\_ % Organic Matter
	2. \_\_\_\_\_\_ Available Water Storage (in/8 in soil)

Table 8:

* 1. \_\_\_\_\_\_ Excess Water Storage (After Subtracting 1.25 inches from Available Water Storage)
	2. \_\_\_\_\_\_ Factor to determine maximum impervious area to be treated
	3. \_\_\_\_\_\_SF of impervious area that can be treated with SQR area
1. Provide the calculations and quantities of materials applied as amendments

**Topsoil:**

\_\_\_\_Depth of topsoil (in feet) [For example: 1” of topsoil = 1”/12” = 0.083 ft of topsoil]

\_\_\_\_Depth of topsoil (in feet) x \_\_SF of treated area = \_\_\_\_\_CF of topsoil

\_\_\_\_CF of topsoil / 27 cf/cy = \_\_\_\_cy of topsoil needed

 \_\_\_\_CF of topsoil x 90 lbs/cf = \_\_\_\_lbs of topsoil/2,000 lbs/ton = \_\_\_tons of topsoil needed

**Compost:**

\_\_\_\_\_\_\_SF x \_\_\_\_\_\_depth of compost application x 0.0031 = \_\_\_\_\_\_CY of compost needed

\_\_\_\_\_\_\_CY x 1,200 lbs/CY (on average) divided by 2,000 lbs = \_\_\_\_\_\_tons of compost needed

1. Provide a copy of the planting plan with quantities of seed or plants used and a listing of species and rates applied.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Describe the erosion and sediment control measures used to protect the soil quality management area until vegetation is established on disturbed sites that shed towards the soil quality management area. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***FOR REVIEWERS USE ONLY***

[ ]  Design appears to comply with applicable design standards, and local, state, and federal requirements.

[ ]  Design does not appear to comply with applicable design standards, and local, state, and federal requirements.

Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name of Reviewer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example:** Assume Method 6 will use 6 inches of tillage and 1 inch of topsoil and 1 inch of compost.

Assume compost is 40% Organic Matter (O.M.) and Topsoil is 2% Organic Matter (O.M.).

 Assume 1” of compost = 1”/12”= 0.083 ft x 1’ long x 1’ wide = 0.083 cf of compost

 Assume 1” of topsoil = 1”/12” = 0.083 ft x 1’ long x 1’ wide = 0.083 cf of topsoil

 Assume 6” of topsoil = 6”/12” = 0.5ft x 1’ long x 1’ wide = 0.5 cf of subsoil

0.083 cf of compost/27 cf/cy = 0.0031 cy of compost x 1200 lbs/cy compost = 3.7 lbs of compost

0.083 cf of topsoil x 80 lbs/cf = 6.64 lbs of topsoil

0.5 cf of subsoil x 90 lbs/cf = 45 lbs of soil

3.7 lbs compost + 6.64 lbs of topsoil + 45 lbs of subsoil = 55.34 lbs in 8 inch profile

3.7 lbs of compost/ 55.34 lbs in 8” profile = 0.067% of weight of compost x 0.40 O.M. = 2.67% O.M. by weight

6.64 lbs topsoil/ 55.34 lbs in 8” profile = 12% of weight is topsoil x 0.02 O.M. = 0.0024% O.M. by weight

2.67% O.M. + 0.0024% O.M. = 2.6% O.M. by weight

Between 1.33” and 1.62” of rain can be stored. Assume 1.53” can be stored.

(1.62 -1.33 = 0.29 x 0.68 = 0.1972 +1.33 = 1.527) 1.53” – 1.25” = 0.25 in of extra

**Go to table 8**

0.50 excess storage volume = factor of 0.42

0.42 factor/2 = 0.21

10,000 square feet of SQR area x 0.21 = SQR can address 2100 square feet of impervious surface.