

August 6, 2012

Mr. Douglas H. Fisher  
Secretary of Agriculture  
New Jersey Department of Agriculture  
P.O. Box 330, Trenton, NJ 08625

**Re: 2012 Revised Erosion Control Standards**

Dear Secretary Fisher,

We would like to comment on the revised standards of the Soil Erosion and Sediment Control Act (N.J.A.C. 2:90-1.3) posted to the New Jersey Register on July 2, 2012. It is our understanding that the primary incentive for revising these standards is to ameliorate excess stormwater runoff and nonpoint source pollution in New Jersey's waterways by requiring the restoration of compacted soils. To accomplish this goal, post-disturbance soil restoration practices should ensure maximum stormwater infiltration and appropriate vegetative cover. We believe the revised standards will not ensure soil restoration for the following reasons.

1. *Requirements for remediation of compacted soil.*

We have the following concerns about the proposed soil compaction remediation requirements as described in the Standards for Land Grading.

When considering scientific evidence, the maximum accepted bulk density levels given for each soil type in Table 19-1 of the standards are too lenient and will not adequately limit compaction, as is the intent behind such standards. For example, a typical bulk density of a native Pinelands soil, which is generally classified as sand to sandy loam, is 0.6 – 0.75 g/cm<sup>3</sup> in the upper 0-10 cm and 1.27-1.36 g/cm<sup>3</sup> for mineral soil at 10-20 cm depth. The accepted maximum bulk density value for sands and sandy loams of 1.6 g/cm<sup>3</sup> as given in Table 19-1 of the standards corresponds to a significantly greater level of compaction than that which naturally characterizes these soils. As a result, the permitted level of compaction will defeat the purpose of the remediation standards.

The target bulk density levels as given in the revised standards are as follows:

**Table 19-1 – Maximum Bulk Densities (gm/cc) by soil type**

<b>Soil type</b>	<b>Target Bulk Density</b>
Sands	1.6
Very fine sand	1.6
Sandy Loam	1.6
Sandy Clay Loam	1.6
Silt Loam	1.5

Clay	1.4
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These values are cited as having come from a NRCS Soil Quality Institute document (Soil Quality Urban Technical Note No. 2, 2000). However, there are several differences between the above table and the original NRCS table from which these values are derived, shown below:

**Table 2. General relationship of soil bulk density to root growth based on soil texture (NRCS Soil Quality Institute, 1999).**

Soil Texture	Ideal bulk density (g/cm <sup>3</sup> )	Bulk densities that may affect root growth (g/cm <sup>3</sup> )	Bulk densities that restrict root growth (g/cm <sup>3</sup> )
Sands, loamy sands	<1.60	1.69	>1.80
Sandy loams, loams	<1.40	1.63	>1.80
Sandy clay loams, loams, clay loams	<1.40	1.60	>1.75
Silts, silt loams	<1.30	1.60	>1.75
Silt loams, silty clay loams	<1.10	1.55	>1.65
Sandy clays, silty clays, some clay loams (35-45% clay)	<1.10	1.49	>1.58
Clays (>45% clay)	<1.10	1.39	>1.47

Comparing these two tables shows that, first, the table given in the standards excludes several soil types that are included in the NRCS table. Second, the values in the “Target Bulk Density” column in Table 19-1 do not reflect the “Ideal bulk density” values given in the NRCS table for each soil type. In fact, several of the “Target Bulk Density” values cited by the standards are equal to or higher than the “Bulk densities that may affect root growth” values given in the NRCS table. It is not difficult to argue that the threshold values given in the standards are too lenient and do not convincingly demonstrate that the site soil, if left without compaction remediation, will not restrict root growth nor limit water infiltration. If a contractor is to be exempt from further compaction remediation treatments, they should not leave the soil with a level of compaction that “may affect root growth”.

In the Standard for Land Grading, if the SSCC will not take the optimal approach toward compaction avoidance by revising these standards such that they require post-disturbance bulk density levels to not exceed pre-disturbance bulk density levels for each site, then, at the very least, the target bulk density levels that contractors are required to meet to be excused from the compaction remediation requirements should reflect the “Ideal bulk density” levels given in the NRCS table. Using these NRCS values would not only allow the SSCC to credibly defend their

standards, but also greatly increases the chance that disturbed site soils, without further measures to alleviate compaction, will actually meet the original goals of water infiltration and vegetation persistence.

2. *Soil restoration guidelines for the NJ Pinelands (“Pinelands National Reserve Specifications”).*

We have the following concerns about the proposed soil restoration guidelines for the Pinelands National Reserve.

- a. The temporary stabilization approach (“Re-establishment of Native Vegetation without seeding”), as opposed to the permanent approach (“Reseeding with Pinelands Native Vegetation”), should be required for sites which exhibit native Pinelands vegetation and soils prior to the proposed disturbance. This will help ensure that the native character of the site is preserved.
- b. The O-horizon should be included along with the A-horizon during stockpiling. This will increase the chance that the native vegetation seedbank as well as beneficial fungal species are preserved in the soil and applied back to the site.
- c. Nutrient levels of any non-native Pinelands soil should be defined as the various forms of nitrogen and phosphorus, not just referred to as “nutrients.” These are the two soil nutrients whose levels impact native vegetation the most.
- d. Applying a two-inch layer of wood chips, as the proposed standard recommends under the guidelines for re-establishing native vegetation without seeding, will likely inhibit regeneration of native plants, defeating the purpose of this re-establishment technique. This guideline should be removed. The same concern applies to the standard’s recommended use of straw.
- e. While the text of these Specifications refers to the two stabilization approaches as “Reseeding with Pinelands Native Vegetation” and “Re-establishment of Native Vegetation without seeding,” the embedded flow chart (“Pinelands Natural Regeneration Process”) uses the terms “Permanent Stabilization” and “Temporary Stabilization.” These terms should be clarified and used consistently throughout the specifications. Also, the flow chart instructs the reader to “mulch pursuant to mulch standard” as the last step in the “Permanent Stabilization” pathway. However, under the text for “Reseeding with Pinelands Native Vegetation,” it states that “No mulch shall be placed over the seeded area.” This contradiction should be clarified by removing the mulch step in the flow chart.
- f. We encourage the SSCC to add additional Pinelands native plant species to the list of recommended seed mixes. Actual use of recommended species is of course constrained by the commercial availability of species, but listing such species in the standards could motivate commercial growers to propagate and sell beneficial natives. Some species we recommend listing include Broom Sedge (*Andropogon virginicus*), Bearberry (*Arctostaphylos uva-ursi*), Trailing Tick-trefoil (*Desmodium rotundifolium*), Teaberry (*Gaultheria procumbens*), Grass-leaf Blazing-star (*Liatris pilosa*), Butterfly-weed (*Asclepias tuberosa*), Orange-grass (*Hypericum*

*gentianoides*), Pine Barren Sandwort (*Minuartia caroliniana*), Horse-mint (*Monarda punctata*), and Hudsonia (*Hudsonia ericoides*).

We appreciate your attention in these matters and hope that our comments are considered as you work through the final stages of enacting these standards.

Sincerely,

Amy Karpati, Ph.D.  
Director for Conservation Science  
Pinelands Preservation Alliance