



# Soil Amendment Requirements

**Effective February 15, 2010**  
**Revised December 31, 2016**

## Preserving and Restoring Healthy Soils on Site Developments

Healthy soil is vital to a clean environment and healthy landscapes. Deep soil that is rich in organic material absorbs rainwater, helps prevent flooding and soil erosion, and filters out water pollutants. Healthy soil also stores water and nutrients for plants to use in dry times, promoting healthy plants that require less irrigation, toxic pesticides, and other resources. Land development and landscaping practices can damage these valuable soil functions by removing or compacting topsoil. The result is erosion, unhealthy landscapes that are difficult and expensive to maintain, polluted water, destroyed fish habitat, and increased need for costly stormwater management structures. (King County 2011 “Achieving the Post-construction Soil Standard”)

## Purpose

This document is intended to describe how to meet these soil amendment requirements, as well as provide clarifications and minor modifications to King County’s soil amendment requirements in terms of seasonal restrictions and cash assignment requirements. Additional guidance for this BMP can be found in *Building Soil: Guidelines and Resources for Implementing Soil Quality and Depth BMP T5.13* (Stenn et al. 2012), which is available at [www.buildingsoil.org](http://www.buildingsoil.org).



## Infeasibility Criteria

The following portions of the project area are considered to be infeasible for soil amendment:

- Areas covered by an impervious surface
- Areas incorporated into a drainage facility
- Areas that are subject to a state surface mine reclamation permit
- Structural fill or engineered slopes
- Till soils with slopes greater than 33 percent

## Soil Amendment Requirements

The City of SeaTac's soil amendment requirements apply to projects that:

1. Create 2,000 square feet or more of new impervious surface, or
2. Result in 7,000 square feet or more of land disturbing activity.

KCC 16.82.100.F & G have been amended by the City of SeaTac to include the following:

- The duff layer and native topsoil shall be retained in an undisturbed state to the maximum extent practicable. Any duff layer or topsoil removed during grading shall be stockpiled on-site in a designated, controlled area not adjacent to public resources and critical areas. The material shall be reapplied to other portions of the site where feasible.
- Areas that have been cleared and graded shall have the soil moisture holding capacity restored to that of the original undisturbed soil native to the site to the maximum extent practicable. The soil in any area that has been compacted or that has had some or all of the duff layer or underlying topsoil removed shall be amended to mitigate for lost moisture-holding capacity.
- Soil amendment calculations and a site map indicating projected soil amendment areas are due at the time of project application submittal.
- Unlike King County, the City of SeaTac **does not** limit the installation of soil amendments to the growing season (May 1 – October 1). However, soil amendments, whether compost or topsoil, shall be installed in a manner that will prevent off-site impacts from construction site run-off. Further, soil amendments are subject to "Wet Season Construction" requirements (2016 KCSWDM).
- Cash Assignments:
  - Owners/contractors may provide a cash assignment for soil amendments if requesting final approval between October 1 – May 1 (during the rainy season)
  - Cash assignment amounts shall equal to 120% x (materials + labor)
  - Owners/contractors must provide documentation ensuring legal access to the site (via construction easement, condition of sale, etc.) to install soil amendments as a condition of cash assignment acceptance/approval
  - Cash assigned soil amendments shall take place during the growing season (May 2 – September 30) immediately following the date of the cash assignment
- Imported topsoil layer requirements:
  - Topsoil must be a minimum 8 inches thick
  - Topsoil must have an organic matter content of 5% dry weight in turf areas – and 10% dry weight in planting beds
  - Topsoil must have a suitable pH for proposed landscape plants
  - When feasible, the subsoil layer shall be scarified four to six inches with some incorporation of upper material to avoid stratified layers
- Compost used to achieve the required soil organic matter content must meet the definition of "composted materials" in WAC 173-350-220.

### Table B-1. Optimal soil pH range for various plant types.

Plant Type	Soil pH Range
Lawn	5.5 to 7.5
Shrubs (except acid-tolerant plants)	5.5 to 7.0
Acid-tolerant shrubs (rhododendrons, azaleas, mountain laurels, camellias, blueberries, native plants)	4.5 to 5.5
Annual flower and vegetable gardens	6.0 to 7.0

Note: A nursery can provide specific information about suitable soil pH ranges for landscape plants.  
 Source: King County 2011 "Achieving Post-construction Soil Standard"

## Options for Meeting Soil Amendment Requirements (Calculations)

### 1) Amend Existing Soils in Place

- Turf Areas
  - Import 6.17 cubic yards compost (in accordance with 2016 KCSWDM compost specifications) per 1,000 sq. ft. of disturbed soil area
  - Spread compost evenly over the disturbed soils in a 2 inch layer
  - Rototill compost in 12 inches deep where feasible (8 inch minimum depth)
- Planting Beds
  - Import 9.25 cubic yards compost (in accordance with 2016 KCSWDM compost specifications) per 1,000 sq. ft. of disturbed soil area
  - Spread compost evenly over the disturbed soils in a 3 inch layer
  - Rototill compost in 12 inches deep where feasible (8 inch minimum depth)

#### Soil Amendment Calculation Example

Amount of imported compost needed to amend soils on site equals the total square footage of disturbed site soils divided by 1,000 times 6.17 cubic yards.

$$\left( \frac{\text{square feet disturbed soils}}{1,000} \right) \times 6.17 \text{ cubic yards} = \text{cubic yards of imported compost}$$

**Example:** Single Family Home with 3,500 square feet of post construction disturbed soil  
 (3,500 square feet disturbed soils /1,000) x 6.17 cubic yard = imported compost needed  
 (3.5) x 6.17 cubic yards = imported compost needed  
 22 cubic yards = imported compost needed

**Table B-2. Soil Amendment Calculation Examples.**

Square Feet of Post Construction Disturbed Soils	Cubic Yards of Imported Compost Required for Turf Areas
5,000	31
4,500	28
4,000	25
3,500	22
3,000	19
2,500	15
2,000	12

### 2) Import Topsoil Mix

- Turf Areas

- Scarify subsoil layer at least 4-6 inches deep where feasible
- Import 24.7 cubic yards of topsoil containing 5% organic matter (approximately 25% compost) per 1,000 sq. ft. disturbed soil area
- Spread topsoil evenly over the disturbed soils in an 8 inch layer
- Rototill 2 inches of the topsoil into the subsoil.
- Planting Beds
  - Scarify subsoil layer at least 6 inches deep where feasible
  - Import 24.7 cubic yards of topsoil containing 10% organic matter (approximately 40% compost) per 1,000 sq. ft. disturbed soil area
  - Spread topsoil evenly over the disturbed soils in an 8 inch layer
  - Rototill 2 inches of the topsoil into the subsoil.

### Topsoil Calculation Example

Amount of imported topsoil needed to satisfy the soil requirements on site equals the total square footage of disturbed site soils divided by 1,000 times 25 cubic yards.

$$\left( \frac{\text{square feet disturbed soils}}{1,000} \right) \times 24.7 \text{ cubic yards} = \text{cubic yards of imported topsoil}$$

**Example:** Single Family Home with 3,500 square feet of post construction disturbed soil  
 (3,500 square feet disturbed soils /1,000) x 24.7 cubic yard = imported topsoil needed  
 (3.5) x 24.7 cubic yards = imported topsoil needed  
 86 cubic yards = imported topsoil needed



### Other Soil Amendment Options

King County’s soil amendment guide “Achieving the Post-construction Soil Standard” identifies two additional options, which the City considers less feasible in an urban construction environment (i.e., non-native/disturbed soils, limited staging areas) and are not included in this document. However, these options are still available for projects within the City of SeaTac and can be found at: <http://your.kingcounty.gov/solidwaste/greenbuilding/documents/Post-Construction-Soil-Standard.pdf>. These options include:

- **Option 1: Leave native soil undisturbed, and protect from compaction during construction**  
 [Note: This option is only available for sites which contain previously undisturbed native soils, such as undisturbed forested lots.]
- **Option 4: Stockpile site soil, reapply, and amend in place**

## Inspection Approval of Soil Requirements

Soil amendments should take place at the final stage of construction, to ensure soil amendments are not damaged by construction activities. Contractors/property owners needing a soil amendment inspection should call the City at 206.973.4764 and request a Final Erosion Sedimentation Control Inspection (FESC).

- Call in FESC inspection after installation of soil amendments, prior to installation of landscaping.
- Provide City inspector with a site map indicating areas needing soil amendments, as well as soil amendment calculations (see calculation examples on previous pages).
- If amending soil in place, provide City inspector with copies of site specific receipts of delivered compost indicating the volume of materials delivered in cubic yards.
- If importing topsoil mix, provide City inspector with copies of site specific receipts of delivered materials indicating volumes in cubic yards and organic content of topsoil.
  - The contractor shall also provide documentation to confirm that the imported top soil is at an appropriate pH for the proposed landscaping (refer to Table B-2).
- The inspector may require random locations for test pits to be dug to confirm depths of soil amendments and scarification.
- If soil requirements have been met, the City inspector will indicate a partial approval “soil requirements met” on the Inspection Card.