DRAFT Post-Construction Soil Quality and Depth Guide v2

City of Kelso

ELIGIBILITY

This handout is intended to aid applicants using the **Abbreviated Stormwater Site Plan** who have determined that Post-Construction Soil Quality and Depth is required to manage stormwater on their site.

INSTRUCTIONS FOR USING THIS FORM

This handout gives instructions for meeting the requirements to either protect or amend site soils during a small construction project. The handout may be used to select between three different methods of meeting the requirement and to calculate the amount of compost or topsoil needed.

The instructions in this handout have been adapted from the 2016 edition of *Building Soil: Guidelines and Resources for Implementing Soil Quality and Depth BMP T5.13* from Soils for Salmon, a project of the Washington Organic Recycling Council. The full guidelines are available at www.soilsforsalmon.org.

After you have completed the calculations in this guide:

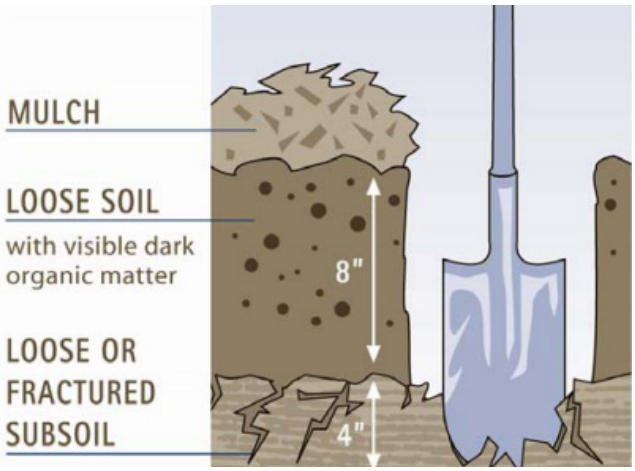
❑ Submit the entire form with your completed **Abbreviated Stormwater Site Plan**

WHAT IS POST-CONSTRUCTION SOIL QUALITY AND DEPTH?

Undisturbed native soil and vegetation provide important stormwater benefits such as infiltration and removal of pollutants. These functions are largely lost when soils are compacted or replaced with lower quality soil and sod during construction.

Post-Construction Soil Quality and Depth (BMP T5.13) reduces negative impacts from the loss of native soils during construction. Other benefits include reduced irrigation needs, healthier plant growth, and reduced need for fertilizers.

Compost amendments are rototilled into disturbed soil to increase organic material and allow the soil to absorb rain water.



Cross section of a planting bed (Reprinted from Building Soil: Guidelines and Resources for Implementing Soil Quality and Depth BMP T5.13, 2016, WA Organics Recycling Council)

MULCH

Mulch protects the loose soil underneath from erosion and moisture loss and prevents weed growth. Use mulch for planting beds.

LOOSE SOIL

The loose soil consists of topsoil or amended soil with a minimum organic matter content. The loose soil provides space for water absorption, filtration, and storage. The soil supports plant growth and helps break down pollutants.

LOOSE OR FRACTURED SUBSOIL

The fractured or scarified soil at the bottom provides a path for water to infiltrate into deeper soil where it can enter groundwater or slowly move laterally to enter streams and lakes.

This guidance is intended for use by property owners and is not a substitute for Kelso Municipal Code. We have substituted some technical language with plainer terms. In case of conflict, the meaning and intent adopted in the Kelso Municipal Code and the Kelso Engineering Design Manual shall prevail.

WHAT ARE THE LIMITS OF POST-CONSTRUCTION SOIL QUALITY AND DEPTH?

This BMP is not feasible on slopes greater than 33 percent.

WHAT ARE THE POST-CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS?

Soil retention. Retain, in an undisturbed state, the duff layer and native topsoil to the maximum extent practicable. In any areas requiring grading, remove and stockpile the duff layer and topsoil on site in a designated, controlled area, not adjacent to public resources and critical areas, to be reapplied to other portions of the site where feasible.

Soil quality. All areas subject to clearing and grading that have not been covered by impervious surface, incorporated into a drainage facility or engineered as structural fill or slope shall, at project completion, demonstrate the following:

1. A topsoil layer with a minimum organic matter content of 10% dry weight in planting beds, and 5% organic matter content in turf areas, and a pH from 6.0 to 8.0 or matching the pH of the undisturbed soil. The topsoil layer shall have a minimum depth of eight inches except where tree roots limit the depth of incorporation of amendments needed to meet the criteria. Subsoils below the topsoil layer should be scarified at least 4 inches with some incorporation of the upper material to avoid stratified layers, where feasible.

2. Mulch planting beds with 2 inches of organic material.

HOW DO I MEET THE SOIL QUALITY REQUIREMENTS?

Follow the three steps below to meet the requirements.

Step 1: On the next page review the three methods for meeting the soil quality design guidelines. More than one option may be selected for different parts of the site. Select one or more options.

Option	Method
❑ **Option 1: Leave native vegetation and soil undisturbed, and protect from compaction during construction.**	Identify areas of the site that will not be stripped, logged, graded or driven on, and protect the soils from compaction. If neither soils nor vegetation are disturbed, these areas do not require amendment. Before construction begins, fence off those areas to prevent impacts. Maintain exclusionary fencing until construction is complete.
❑ **Option 2:** A. **Amend existing topsoil or subsoil in place, or** B. **Stockpile existing topsoil. Replace and amend before planting.**	**A. Amend existing topsoil or subsoil.** Near the end of construction, amend the disturbed topsoil or subsoil that remains where lawn and landscaping is planned. Scarify or till the area to 9 inches depth. Entire surface should be tilled. Do not scarify or till within drip line of existing trees. Amend the soil as described below. **B. Stockpile, replace and amend existing topsoil.** During construction, stockpile the site's topsoil in an approved location. Cover stockpile with a weed barrier material that sheds moisture yet allows air transmission. Near the end of construction, replace topsoil in areas where lawn and landscaping is planned. If quantity of stockpiled topsoil is not sufficient to cover the area to the required depths, below, rototill subsoil prior to placement, or import loose soil. Amend the soil as describe below. **Soil Amendment Instructions** (See the illustration on page 5) **Planting Beds:** Place 3 inches of compost* and rototill into 5 inches of soil (a total amended depth of about 9.5 inches). Tamp or roll to settle the soil down 1.5 inches (8 inches total, settled depth of soil). Add 2-4 inches of organic mulch. **Turf Areas:** Place 1.75 inches of compost* and rototill into 6.25 inches of soil (a total amended depth of about 9.5 inches). Tamp or roll to settle the soil down 1.5 inches (8 inches total depth of soil).
❑ **Option 3: Import topsoil of sufficient organic content and depth to meet the requirements.**	Near the end of construction, import 8 inches of topsoil with a PH from 6.0 to 8.0 and meeting minimum organic content below. Scarify or till subgrade in two directions to 6 inches depth. Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained. **Planting Beds:** Topsoil mix containing a minimum 10% organic matter. • Place 4 inches of imported topsoil mix on surface and till into 2 inches of soil. • Place second lift of 4 inches topsoil mix on surface. • Rake beds to smooth. • Mulch planting beds with 2 inches of organic mulch. **Turf Areas:** Topsoil mix containing a minimum 5% organic matter. • Place 4 inches of imported topsoil mix on surface and till into 2 inches of soil. • Place second lift of 4 inches topsoil mix on surface. • Rake to level.

*** Compost must:**

1. Be produced by a permitted facility. A list of permitted compost facilities is available online at: http://www.ecy.wa.gov/programs/swfa/organics/soil.html
2. Have organic matter content of 40% to 65%
3. Have a carbon to nitrogen ration below 25:1

Continue to Step 2.

Step 2: Calculate quantities of compost or topsoil needed in cubic yards.

Options 2 for Planting Beds:

_____ planting bed area (sq. ft.) x 0.25 (ft.) / 27 = _____ cubic yards of compost

Option 2 for Turf Areas:

_____ turf area (sq. ft.) x 0.15 (ft.) / 27 = _____ cubic yards of compost

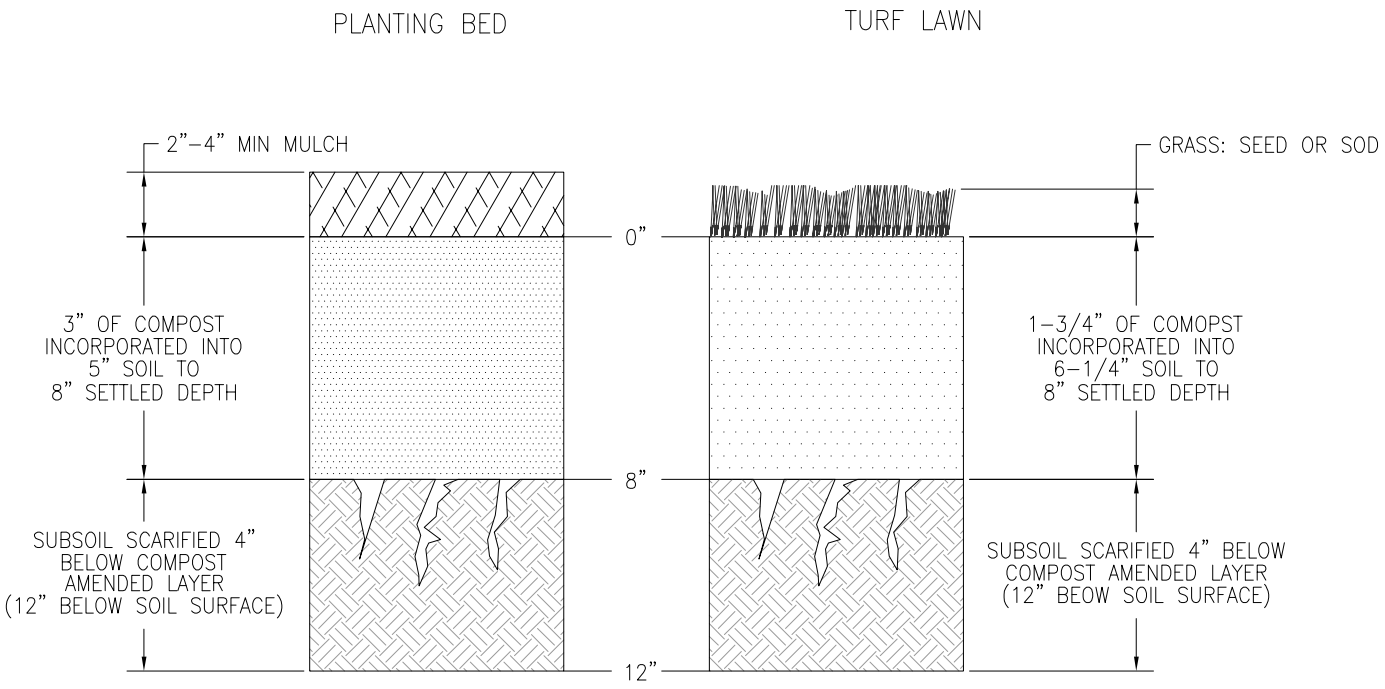
Option 3:

_____ planting beds + turf area (sq. ft.) x 0.67 (ft.) / 27 = _____ cubic yards of topsoil

Step 3: Order products meeting minimum requirements for organic matter and pH.

- Obtain and keep copies of product test results from supplier.
- Retain delivery receipt showing product and quantity.

ILLUSTRATION FOR OPTION 2, AMEND EXISTING SOIL



SECTION
N.T.S.

NOTES:

1. COMPOST SHALL HAVE ORGANIC MATTER CONTENT BETWEEN 40–65% AND CARBON TO NITROGEN RATIO BELOW 25:1.
2. COMPOST MUST BE PRODUCED AT A PERMITTED COMPOSTING FACILITY
3. THE ORGANIC CONTENT FOR "PRE–APPROVAL" AMENDMENT RATES CAN BE MET ONLY BY USING COMPOST THAT MEETS THE DEFINITION FOR THE "COMPOSTED MATERIALS" IN WAC 173–350–220.

Kelso WASHINGTON

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