



## PROTECTING YOUR SOIL DURING CONSTRUCTION

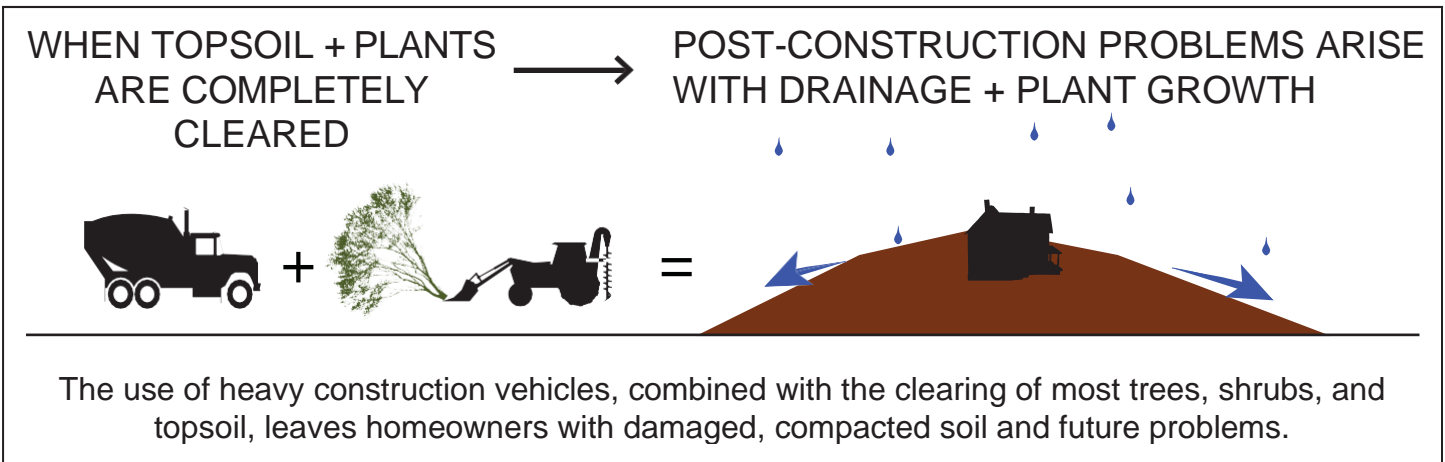
*Protecting topsoil on your property during construction helps with future stormwater management and saves money by reducing the amount of soil to be imported after construction*

We all know that good soil is the foundation for a beautiful landscape. Many people don't realize that uncompacted, healthy soil also helps rainwater soak into the ground and helps to filter out pollutants - in addition to supporting landscape plants.

Protecting your soil during construction is an important way to save money and take care of your property. Existing soil can be stored onsite rather than hauled away, replacement soil won't need to be purchased and hauled in, post-construction landscaping will be simpler, and plant survival rates should be higher because of the deeper layer of topsoil.

Unfortunately, soil is rarely treated with the respect it deserves, despite the many services it provides.

Typical construction on new, undeveloped sites usually involves the removal of most existing vegetation and topsoil to facilitate the building process. Unfortunately, this approach causes serious impacts to future stormwater management and landscaping, and it often involves expensive "fixes." Therefore, the best approach for land development is to preserve as much undisturbed soil and vegetation as possible. This guide offers a few simple tips for protecting one of your property's greatest overlooked assets: its soil.



### HOW CAN SOIL BE DAMAGED DURING CONSTRUCTION?

- Heavy equipment repeatedly driving over and parking on soil leads to compaction.
- Stockpiled construction materials compact the soil below.
- Improper cleaning of construction equipment (especially cement wash out) pollutes soil.

Healthy soil contains roughly 50% pore space (filled with air and water), 50% mineral (sand, silt or clay) and a small amount of organic matter and soil biology. When this air space is compacted

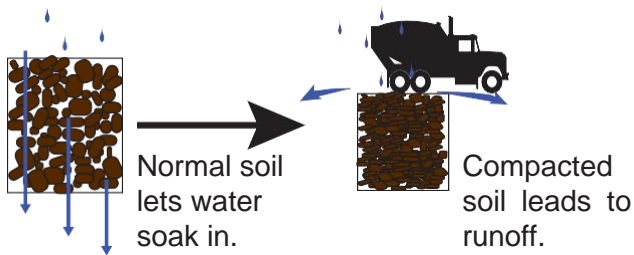
during construction, the soil acts like concrete. Water can't soak in, so it ponds on the surface or rapidly drains off. Plants often struggle to get established in the shallow layer of replacement topsoil left on new building sites, and homeowners have to spend a significant amount of money attempting to recreate original site soil conditions. It is difficult and expensive to break up or attempt to restore compacted soil. Instead, avoid soil compaction wherever - and whenever - possible.



## HOW CAN I PROTECT MY SOIL DURING CONSTRUCTION?

The best way to protect your soil is to plan ahead, before construction starts. Begin with the goal of minimizing disturbance to your property: limit the “construction footprint” as much as possible while still providing space to achieve construction goals. As a rule, the less impacts allowed to your site, the less money and time will be spent trying to fix it later.

- Identify areas of soil/vegetation to be protected and areas where soil must be removed. Collaborate with your contractor to develop a strategy that you agree on.



- If possible, retain and store all removed topsoil so it can be reused on your property after construction is complete.

Remember: Retain as much undisturbed soil and as many trees and shrubs as possible on the project site; this will provide the greatest long-term benefit to the property. For those areas that must be disturbed by construction equipment, plan to restore the soils afterward.

← Driving + parking heavy equipment on your property without careful planning will damage soil, limiting water infiltration and creating future stormwater management problems.

### 1. PLANNING + DESIGN: DEVELOP STRATEGY + DEFINE PROTECTED AREAS

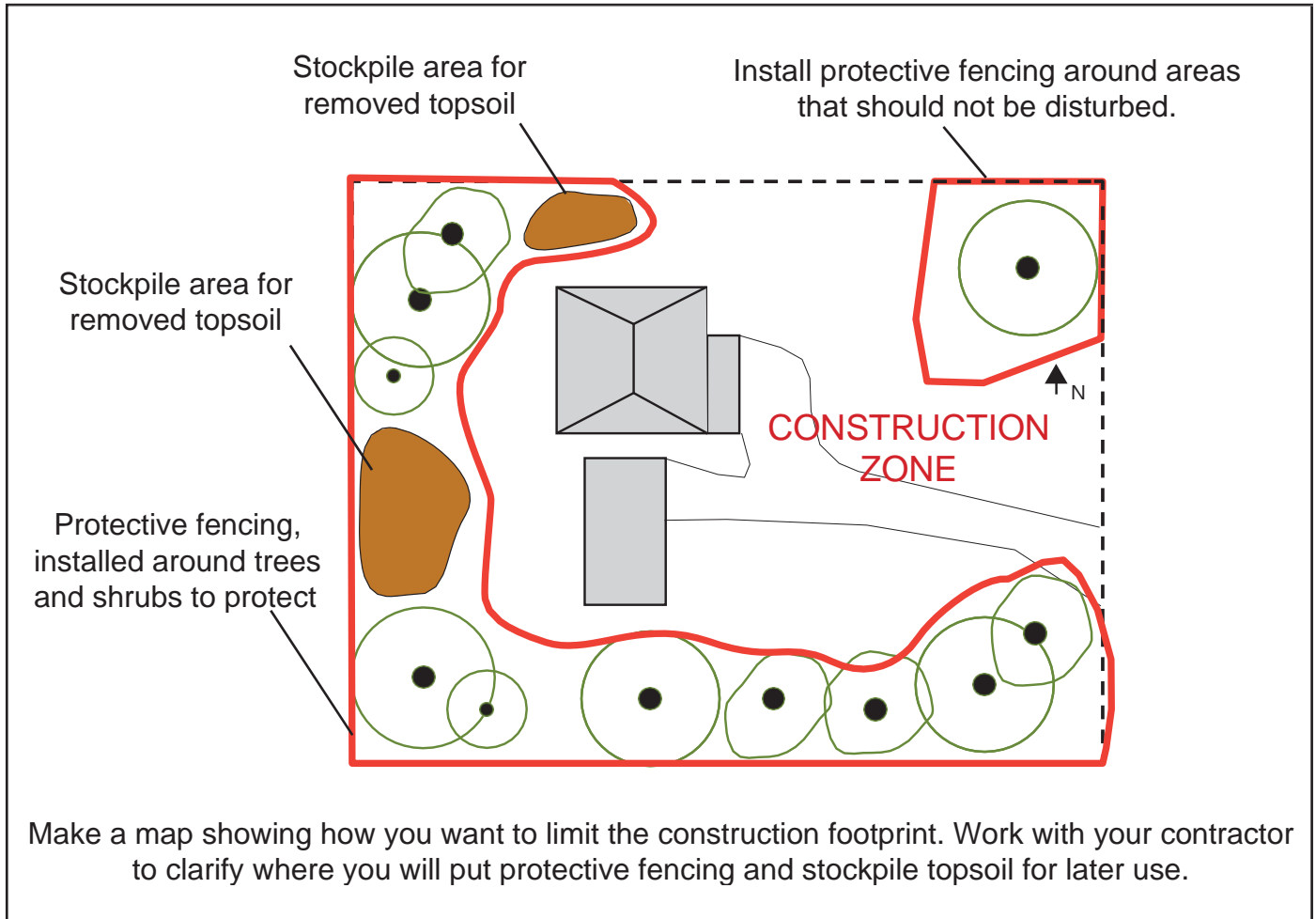
- Develop a site protection plan showing areas to be protected, areas that will be disturbed and later restored, and soil/com- post/mulch import amounts for each area.
- Before construction begins, review your plan with project managers and contractors to make certain that everyone agrees with the strategy.

### 2. CONSTRUCTION: FOLLOW SITE PROTECTION PLAN

- For soil that will be protected in place, install high-visibility fencing around areas that are off-limits to vehicle traffic, material storage, or disturbance (typical orange construction fencing works well). Clearly mark the areas on a property map and review it with all contractors.
- For topsoil and forest duff (the topmost layer of leaves, fungi, etc.) to be removed (from the construction zone or building footprint, for example), pile the duff and topsoil in separate piles, in a location out- side of the construction zone.
- Cover all stockpiled materials with woven weed barrier sheeting (available at nurseries) or other breathable cover (geotextile fabric) weighted down with sandbags, boards or other heavy objects. Overlap the edges of cover sheets by at least 1 foot. Weight down or tape all seams.
- Surround the stockpiles with a silt fence to ensure that water doesn't wash soil away, causing water quality problems.



### EXAMPLE: A SOIL + VEGETATION PROTECTION MAP FOR YOUR CONTRACTOR



### 3. ADDITIONAL TIPS

- Do earth work and soil preparation during the dry season to avoid damaging soil.
- Balance cut and fill wherever possible. Avoid radical alterations to the original topography of your property.
- If you add compost to amend soil post-construction, use a high-quality product. Check with the WA Department of Ecology for a list of certified compost suppliers.
- Expect post-construction amended soils to “settle,” or sink a little bit over time. Topplan for this, place amended soils a bit higher than final grade – or retain/import amended topsoil to meet final grade.
- Where possible, grind down or chip re-moved vegetation to reuse as mulch on your site. This saves the effort of hauling and dumping a resource that you would otherwise go out and purchase.
- Avoid tilling through tree roots or raising the soil height around tree trunks.
- Mulch all planting beds and continue to protect restored soils from compaction in the future (by vehicles, etc.).
- Talk to your contractor about using compost-based erosion control practices where possible. The compost can then be reused as a soil amendment, saving money and avoiding waste.



### 3. POST-CONSTRUCTION: RESTORE AREAS WITH DAMAGED SOIL

After construction you want to have at least 12 inches of finished, uncompacted soil depth in the areas that were disturbed. Ideally, this should include at least 8” of compost-amended topsoil. This will improve long term stormwater infiltration, improve plant health and growth, and enhance the function of your property as a whole.



up, or “rip” compacted soil (using a tractor or an excavator) to 12 inches below the surface. Next, till in 3 inches of compost to an 8-inch depth.

#### SOILS RESTORATION OPTIONS

If it was possible to stockpile original topsoil from your site during construction, reuse this valuable resource. You can place the soil on areas compacted by construction equipment, such as haul roads, materials storage areas, and anywhere that the soil was damaged. First, till subsoils to a minimum depth of 4 inches. Next, place topsoil over tilled subsoils to reach a minimum depth of 8 inches. Amend stockpiled topsoil with 3 inches of compost. The finished, uncompacted soil depth should be 12 inches.

If there was no room to save and stockpile your original topsoil, you will need another method to restore damaged soil. First, break

You can also import quality topsoil. Before placing imported soil, first till subsoil to a minimum depth of 4 inches. Next, place 8” of compost-amended topsoil (35% compost by volume for planting beds; 20% for turf). Ideally, rototill some topsoil into the subsoil before placing the rest on top. This minimizes the risk of creating layers with different soil conditions, which can cause problems for plant growth and water movement.

For excellent detailed guidance, refer to the manual, **Building Soil**, available at [www.soilsforsalmon.org](http://www.soilsforsalmon.org). This document offers additional instructions as well as calculators to help you determine material quantities (such as how much compost you might need to amend your soil).

#### RESOURCES

- “Soils for Salmon” website, [www.soilsforsalmon.org](http://www.soilsforsalmon.org) (accessed 11.2015)
- BUILDING SOIL: Guidelines and Resources for Implementing Soil Quality and Depth BMP T5.13 in WA*
- Detailed “How-To” guidance documentation, calculators and other useful materials

*Low Impact Development Manual for Puget Sound, 2012:*  
[https://www.psp.wa.gov/downloads/LID/20121221\\_LIDmanual\\_FINAL\\_secure.pdf](https://www.psp.wa.gov/downloads/LID/20121221_LIDmanual_FINAL_secure.pdf) (accessed Sept. 2019).

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“This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-O1J223-01 Contract #16-05251 through the Washington Department of Fish and Wildlife. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency or the Washington Department of Fish and Wildlife, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.”