

Quick Guide



CompostWise

GUIDANCE ON PROCURING
AND APPLYING COMPOST



King County

Department of
Natural Resources and Parks
Solid Waste Division

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What is compost?

Compost is organic material such as yard trimmings and food waste that has undergone biological transformation under controlled conditions to produce a stable product that is beneficial to plant growth and soil health.

Other Resources:

- [KCC Title 18.30 - Compost Procurement and Use](#)
- [2022 Washington Organics Management Law \(HB 1799\)](#)
- [King County’s CompostWise Program](#)
- [Department of Ecology’s Stormwater Management Manual for Western Washington](#)
- [King County’s Stormwater Management Manual](#)
- [King County’s Surface Water Design Manual](#)
- [King County Compost and Topsoil Calculator](#)
- [Soils for Salmon](#)

CompostWise's Quick Guide

King County's Guidance on Procuring and Applying Compost

Purchasing and applying compost improves landscapes and stormwater management, plus helps King County meet waste reduction and climate goals. Using compost is essential to completing the recycling loop of food, yard and wood waste generated by King County households and businesses into a valuable product. This guide shows how to use compost to grow healthier landscapes, while conserving resources and improving the environment. Along with King County's [Universal Compost Contract](#) and CompostWise technical assistance program, it makes it easy for regional public agencies to buy compost and soil mixes made from locally recycled yard and food waste.

Please note KCC Title 18.30 now requires the use of compost in King County projects and annual reporting of purchases to King County Solid Waste Division (SWD). For more information on project types, exceptions, and purchase priorities, please review [KCC Title 18](#).

COMPOST BENEFITS FOR YOUR PROGRAM

Using compost on public projects helps achieve key King County's priorities:

- Composting reduces greenhouse gases and helps King County reach its Strategic Climate Action Plan goals.
- Compost grows healthy plants, cutting use of pesticides that can contaminate surface waters.
- Compost keeps soil loose, improves stormwater infiltration, and removes many pollutants from runoff.
- Compost can help prevent soil erosion and compaction.
- Compost creates healthy soils and increases access to healthy soils which can align with equity and social justice goals.
- Composting keeps organic waste out of the landfill, helping King County achieve its Zero Waste of Resources by 2030 goal.

Use of compost also makes landscape installations and maintenance easier and less expensive:

- Compost stimulates healthy plant growth.
- Compost helps plants thrive with less frequent watering and makes landscapes more drought resistant.
- Compost reduces maintenance, fertilizer and pesticide needs.
- Compost improves plant survival in low-maintenance and naturalized projects.



COMMON COMPOST USES AND BENEFITS

Application	How to Use	Specific Benefits
<p>Amend soil in new landscape and turf plantings</p>	<ul style="list-style-type: none"> Mix 1.75–3 inches of compost into the top 8 inches of site soil, OR import a topsoil mix containing 20-33% compost. To determine how much compost is needed for a project, use the Compost and Topsoil Calculator on page 6 or Use King County's Online Compost and Soil Calculator. 	<ul style="list-style-type: none"> Loosens soil for healthy root growth and plant establishment. Supplies quick and slow release nutrients. Reduces irrigation needs. Improves infiltration and drainage. Reduces plant diseases
<p>Mulch new and established planting areas</p>	<ul style="list-style-type: none"> Spread 1–3 inches of compost around plants and on bare ground. OR use a mix of compost with ground bark or wood around trees and shrubs, for longer lasting weed control and compaction prevention. Calculate how much mulch is needed to cover an area using the formula on page 6 	<ul style="list-style-type: none"> Reduces irrigation needs 50% or more. Smothers sprouting weeds, and makes others easy to pull. Supplies quick and slow release nutrients for healthy growth. Reduces plant disease spread. Prevents runoff and erosion. Looks uniform.
<p>Top-dress established turf</p>	<ul style="list-style-type: none"> Spread ¼ inch of finely screened compost to invigorate old lawns. Up to ½ inch can be applied after core aerating. OR use a mix of compost and coarse sand to improve high use areas on athletic fields and event lawns. Apply ¼ inch as cover when overseeding. 	<ul style="list-style-type: none"> Supplies nutrients and beneficial soil life to rejuvenate depleted turf. Improves moisture and nutrient storage, reducing irrigation and fertilizer needs. Provides seed cover and nutrients for over-seeding. Makes soil looser and more absorbent.
<p>Bioretention and stormwater infiltration BMPs</p>	<ul style="list-style-type: none"> Mix 35–40% compost by volume with specified aggregate for bioretention soil media. Amend vegetated filter strips with 2 inches of compost when organic matter is less than 1%. Washington's Department of Ecology does not allow the use of manure and biosolids as a compost feedstock for the following applications: Bioretention, Rain Gardens, Stormwater Treatment Wetlands, Biofiltration Swales (Bioswale in KC), and Compost Amended Vegetated Filter Strips. For these compost applications, follow the requirements detailed in Chapter 5 of the Stormwater Management Manual for Western Washington.* 	<ul style="list-style-type: none"> Reduces stormwater runoff. Filters some pollutants from runoff. Helps establish plant canopy that sustains and protects the BMP. <p><i>*The Stormwater Management Manual for Western Washington is superseded by local guidance. Be sure to refer to your local jurisdiction's stormwater manual.</i></p>
<p>Erosion control BMPs</p>	<ul style="list-style-type: none"> Mulch 2–3 inches deep to stop runoff and erosion of bare soil, and aid erosion control seeding. Use compost-filled filter-socks to slow and filter surface and concentrated flows.** Compost berms reduce and filter runoff around construction site perimeters.** Calculate mulch needed to cover an area using the formula on page 6. 	<ul style="list-style-type: none"> Reduces storm runoff peaks and improves infiltration. Removes sediment, metals, pathogens, hydrocarbons and other contaminants from runoff. Compost can be reused on site to amend planting areas post-construction. <p><i>** Filter berms and socks require a special coarse grade of compost.</i></p>

WHAT COMPOST AND TOPSOIL PRODUCTS ARE BEST FOR EACH USE?

These compost grades and amended soil mixes are available to King County agencies through the Universal Compost Contract. The composts have a set price as follows: \$24.20 per cubic yard through March 11, 2024 and \$26.62 per cubic yard from March 12, 2024 through March 12, 2025. Prices for blends varies.

Product	Ingredients	Amending Soil		Mulching		Other
		Planting Beds	Lawns	Garden Beds	Shrubs-Trees-Roadside	
Fine Compost	Compost – 100% < 7/16" 75-100% <1/4"	X	X	X	X	Bioretention, Erosion Control Mulch
Medium Compost	Compost – 100% < 1" 70-85% <1/4"	Clay Soils	Clay Soils	X	X	Erosion Control Mulch
Coarse Compost	Compost – 100% < 2" 80-100% < 1" 40-60% <1/4"			X	X	Erosion Control Mulch
Planting Soil	66% Sandy Loam 33% Compost	X	Low traffic lawns			
Winter Mix	50% Sandy Loam 25% Compost 25% Sand	For rapid drainage	Moderate traffic lawns			
Bioretention / Turf Mix	60% Sand 40% Compost		Sports and event lawns			Bioretention, Topdressing turf
2-Way Topsoil	66% Compost 33% Sand	X				Raised Planters
Landscape Mulch	50% Compost 25% Bark 25% Aged Wood Chip			X	X	
Pro-Mulch	50% Compost 50% Aged Wood Chip			X	X	
Potting Soil	Compost, Fir Bark, Pumice, Coir & Fertilizer	X				Containers and Raised Planters

CALCULATE HOW MUCH COMPOST OR SOIL MIX IS NEEDED TO COVER AN AREA TO A SPECIFIED DEPTH

Use this formula to determine how much compost or soil mix is needed to cover an area **when you know what depth is needed**. Projects on newly cleared and graded areas need to be amended in compliance with King County's Post Construction Soil Standard ([KCC 16.82](#)), using the online [Compost and Topsoil Calculator](#). Other projects can also use this calculator to determine the correct amount of compost. Pre-approved rates are 3 inches of compost to amend planting beds, and 1.75 inches to amend turf areas. Using the online calculator and test results for the soil and compost may allow reduced rates.

**Note that compliance with [KCC 16.82](#) helps King County capital projects comply with [KCC 18.17](#) - Green Building Program ([Sustainable Infrastructure Scorecard](#), Material Credit 3.0: Sourcing of Raw Materials - 4 points & PM Prerequisite 3: Account & Mitigate for how a project will affect and be affected by climate change).*

<p>Formula to calculate compost or soil needed to cover an area at pre-determined depth:</p> <p>_____ (Enter Inches of compost to apply)</p> <p>X 3.1</p> <p>= _____ yards compost needed per 1,000 sq. feet</p> <p>X _____ (enter X 1,000s square feet to cover)</p> <p>= _____ yards of compost needed</p>	<p>Example: To cover 3,000 square feet 3 inches deep:</p> <p><u> 3 </u> (Enter Inches of compost to apply)</p> <p>X 3.1</p> <p>= <u> 93 </u> yards compost needed per 1,000 sq. feet</p> <p>X <u> 3 </u> (enter X 1,000s square feet to cover)*</p> <p>= <u> 279 </u> yards of compost needed</p> <p><i>* One acre = 43,560 sq. feet, so use 43.5 (X 1,000)</i></p>
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USING THE KING COUNTY UNIVERSAL COMPOST CONTRACT TO PURCHASE AND APPLY COMPOST

Information regarding the universal compost contract, including specifications and pricing, can be found [here](#).

Authorization for orders:

- Any King County agency can use this universal compost contract.
 - The agency can contact the vendor directly and reference the CPA when purchasing.
 - CPA Number: 6155029
 - Vendor Contact: Chris Cunningham at chris.cunningham@cgcompost.com
 - OR the agency can reach out to the CompostWise Program to facilitate the purchase.
 - Contact email: compost@kingcounty.gov
- Any regional public agency can piggyback off of this contract.
 - The jurisdiction must have a [cooperative purchasing agreement](#) with King County in place.
 - If there is a cooperative purchasing agreement in place, the jurisdiction can reach out directly to the vendor to piggyback off the contract.
 - Vendor contact: Chris Cunningham at chris.cunningham@cgcompost.com

Deliveries:

- ❑ Compost and blended products purchased using the Universal Contract may be picked up at one of the vendors sales yards located throughout the County, or scheduled for delivery by the truckload or for application by blower truck.
- ❑ Truckload deliveries range from 1 cubic yard mesh bags to 20-yard dumping trailers.
- ❑ Blower trucks can be used to economically apply compost or mixes in hard to reach areas including slopes, narrow and enclosed areas.

Reach out to King County's CompostWise Program at compost@kingcounty.gov

HOW USING COMPOST HELPS MEET PROJECT ENVIRONMENTAL GOALS

- ❑ **Recycled Content:** The compost purchased through King County's Universal Compost Contract is made from 100% recycled organic wastes: Landscape waste, post-consumer food waste, and land clearing debris. This helps King County achieve its Zero Waste of Resources goal by 2030, and may help a project to meet LEED **MR 4** and [KC SIS M Credit 3.0](#)
- ❑ **Local Materials:** 100% of the materials used to make compost purchased through King County's Universal Compost Contract originates in King, Snohomish and Pierce Counties. Topsoil mixes are made using naturally occurring loams reclaimed from local development projects. This may help a project meet LEED **MR 5** and [KC SIS M Credit 3.0](#)
- ❑ **Greenhouse Gases:** The composter that supplies King County's Universal Compost Contract receives credits for reducing carbon emissions by diverting organic wastes from landfills. Organic materials decompose anaerobically when buried In landfills, producing high quantities of methane—which is a greenhouse gas 30 times more potent than carbon dioxide. Aerobic composting processes prevent conditions that produce methane. Much of the carbon is fixed in the compost, and ultimately sequestered by binding with soil particles or becoming part of woody plant tissues. At this time, additional carbon credits are not available to users of finished compost, except for agricultural applications. King County capital projects please see [KC SIS PM Prerequisite 3](#): Account & Mitigate for how a project will affect and be affected by climate change (GHG mitigation and resilience).



FREQUENTLY ASKED QUESTIONS

1. How can we assure that compost meets contracted specifications and is free of contaminants?
2. Is it possible to use too much compost?
3. What can be done about smelly compost?
4. Why are biosolids limited as a percentage of approved compost?
5. Should tree planting pits be amended with compost?
6. Is compost the same as humus?
7. Is phosphorus runoff a problem where compost is used to amend soils?

1. How can we assure that compost meets contracted specifications and is free of contaminants?

Any compost supplier must provide a copy of test results showing that a sample of compost tested within the past 60 days meets the Universal Contract requirements, include the following:

- The King Co. Universal Contract Compost Specifications Checklist** (See Extended Guide) provides a convenient form to compare submitted compost test results to contract requirements.
- Washington Department of Ecology regulations assure basic public health standards for compost.** WAC 173-350-220 Composting Facilities operating standards require that compost meet the parameters in Table 220-B (at right), before it can be sold.
- Extensive testing shows pesticides, hydrocarbons, volatile organic compounds and other complex contaminants** degrade or are diluted to safe levels in large scale, aerated composting systems. Projects in sensitive areas, such as remediation sites, may require additional testing to ensure imported compost or soils meet Model Toxics Control Act (MTCA) standards. Purchasing for such projects should be managed by an environmental specialist.
- Plant pathogens and weed seeds are destroyed by the extended hot composting processes used at permitted composting facilities in compliance with WAC 173-350-220 requirements.** Yet weed seeds can blow into stored compost piles after hot composting. If compost is clearly contaminated with weed seeds, the vendor should remove it from the project site. However, it may be difficult to determine whether weed seed has blown in prior to delivery or at the project site. Plant pathogens are generally controlled by the diverse soil life community that thrives on compost.
- Plastics and other inert materials (glass, nails, fabric) should only be present at very low levels in compost, in compliance with WAC 173-350-220.** Film plastics are highly visible in

Table 220-B

Testing Parameters

Metals and other testing parameters	Limit (mg/kg dry weight), unless otherwise specified
Arsenic	≤ 20 ppm
Cadmium	≤ 10 ppm
Copper	≤ 750 ppm
Lead	≤ 150 ppm
Mercury	≤ 8 ppm
Molybdenum	≤ 9 ppm
Nickel	≤ 210 ppm
Selenium	≤ 18 ppm
Zinc	≤ 1400 ppm
Physical contaminants	≤ 1 percent by weight total, not to exceed .25 percent film plastic by weight
Sharps	0
pH	5 - 10 (range)
Biological stability	Moderately unstable to very stable
Fecal coliform	< 1,000 Most Probable Number per gram of total solids (dry weight)
OR	
Salmonella	< 3 Most Probable Number per 4 grams of total solids (dry weight)

compost, and some may be apparent even at the specified level of under 0.1%. If compost is clearly contaminated with glass, nails or high concentrations of plastic, the Universal Contract vendor can be compelled to clean up or remove it from the project site

- For applications that do not allow manure and biosolids as feedstocks, the supplier will need to provide a certification from the supplier that these are not contained in the compost.

HOW TO DETERMINE COMPOST QUALITY

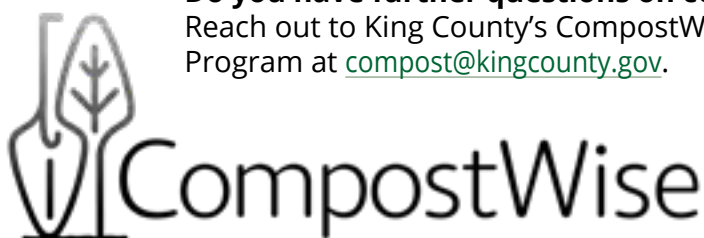
	Good	Not Good
Look	Dark brown or black (Whitish coating on some particles is acceptable bacterial growth)	Light colored sawdust or shavings visible Large percentage of sand or gravel visible Orange or yellow fungal growth
	Original plant parts not visible	Undecomposed plant parts distinguishable
	Minimal inorganic contaminants	High amount of rigid or plastic film Visible glass, nails or ceramics
Smell	Little or no odor	Rotten egg/sulfur smell
	Earthy smell	Ammonia odor
	Slightly fruity	Strong barnyard odor
Feel	Particles mostly soft	Gritty/sandy or dusty
	Clumps easy to break apart in hands	Greasy
	Squeezed handful falls apart when tapped with finger	Wet to point where squeezing a handful leaves hand wet, or water drops emerge between fingers

2. **Is it possible to use too much compost?** Yes, adding too much compost to the soil, or too deeply, can impair drainage, inhibit plant growth, and cause excessive soil settling. To prevent these problems, amendment or imported compost/topsoil mixes should mostly be limited to the top 8-12 inches. Only amend soils below 12 inches if needed to break up compaction and organic content is below 5%. In the top 12 inches, limit organic matter content to below 10% in loamy or fine (silty or clayey) soil. It is safe to start at a slightly higher level in gravelly-sandy soils common throughout King County, because organic matter oxidizes rapidly in them.
3. **What can be done about smelly compost?** Freshly delivered compost often has a mild “farm” odor, which some people find objectionable. This is normal, and spreading and/or tilling the compost into the soil should make the odor dissipate within 24 hours. Stronger, sulfurous (rotten egg) or ammonia smells indicate that the compost is not mature or too wet.
4. **Why are biosolids and manure limited as a percentage of approved compost?** Specifying the percentage of biosolids or manure provides the compost with the correct ratios for the composting process to work and to produce high quality product. Biosolids and animal manures are different from other compost ingredients in that they are usually more wet and higher in nutrients. Because of this, they are difficult to compost on their own and must be mixed with other materials to achieve the optimal conditions. Woody materials, such as wood chips, sawdust, or yard clippings, are drier than biosolids and manure, and add physical structure to the compost mix, creating pathways for air to flow through the materials as they compost. Woody materials are the carbon source while biosolids or manure (like food waste) are the nitrogen source, so mixing them together in certain percentages creates the right ratio of carbon to nitrogen. During the composting process, the microbes use the nutrients in the biosolids to help them break down the carbon in the woody materials. The finished compost will contain the majority

of the nitrogen and phosphorus in organic forms that soil microbes mineralize, providing slow release nutrients for plants to use over time.

Compost made with biosolids and manure commonly contain higher levels of phosphorus and trace metals (such as zinc and copper) that can contaminate surface waters and harm fish. In stormwater management applications, like bioretention facilities, these nutrients can be concentrated at high levels that may be harmful. As a result, Washington Department of Ecology's Stormwater Management Manual and King County's Surface Water Design Manual do not allow use of compost made with these feedstocks in several stormwater treatment BMPs. Compost made with biosolids and manure commonly contain higher levels of phosphorus and trace metals (such as zinc and copper) that can contaminate surface waters and harm fish. In stormwater management applications, like bioretention facilities, these nutrients can be concentrated at high levels that may be harmful. As a result, Washington Department of Ecology's Stormwater Management Manual and King County's Surface Water Design Manual do not allow use of compost made with these feedstocks in several stormwater treatment BMPs.

5. **Should tree planting pits be amended with compost?** Compost should be used to amend wide, shallow (less than 12 inches) areas to encourage root spread. If trees are planted in small cutouts surrounded by pavement or compacted soil that is not going to be cultivated beyond the planting hole, it is best to plant in the soil that is present after loosening as widely as practical, and then use compost as a 3 to 4 inches mulch extending several feet from the tree stem. Amending a small planting hole with lots of compost can create drainage problems and limit roots from spreading. Do not put compost under heavy root balls of large tree or shrub transplants, because they may settle and leave the plant crown buried and susceptible to rot.
6. **Is compost the same as humus?** The term humus is often inappropriately used to describe compost or rich soil. Humus generally refers to very small particles of well-decomposed organic matter that are stable in the soil for long periods of time, and play an important role in making nutrients available to plants. Compost appears to contain a few to several percent humus, increasing as the compost ages. It is not possible to buy pure humus.
7. **Is phosphorus runoff a problem where compost is used to amend soils?** Compost is a good source of phosphorus for plants. When compost is mixed into loamy soils that contain silt and clay, phosphorus is gradually released and binds to fine soil particles where plants can access it when required for growth. However when compost is blended with coarse sand to make "Bioretention" mixes designed to rapidly infiltrate and filter stormwater, phosphorus may leach through the system, since sand has little capacity to hold nutrients. Where drainage from these facilities discharges within a quarter mile to [sensitive lakes](#) (e.g. Lake Sammamish and small lakes in Bellevue) without contact with native soil that can absorb it, Washington Department of Ecology limits the use of compost for this application. Currently different jurisdictions have varied approaches to what mixes can be used for stormwater filtration in these situations.



Do you have further questions on compost?
Reach out to King County's CompostWise
Program at compost@kingcounty.gov.



Alternative Formats On Request
206-477-4466 • TTY Relay: 711