

{ green home remodel }
healthy homes for a healthy environment



landscape materials





green

What is a Green Remodel?

It's an approach to home improvement with the goal of not only making your house *look* better, but work better—for both you and the environment. Want a healthier home? Lower utility bills? Reduced maintenance? A cleaner planet? A green remodel helps you realize a range of far-reaching benefits from a single smart design. With careful planning, you can create a landscape that combines beauty, efficiency, comfort and convenience with health and conservation.

why

Why Consider a Green Remodel?

SAVE MONEY

Long-lasting, low-maintenance landscape elements prove their value over time. Salvaged and reused materials often cost a fraction of the price of new, while also providing a patina of history and character.

MAKE A HEALTHIER HOME

When you take a green approach to landscape materials selection, you realize health benefits as well as peace of mind. Most people don't realize that many landscape elements contain toxic chemicals, which then can be tracked into your home by people and pets. By making safety a priority, you can identify potential hazards in landscaping materials and then choose those that minimize your family's health risks.

REDUCE ECOLOGICAL IMPACT

When you take a green approach with a landscape project, you choose products with a range of far-reaching benefits: from materials that are easier on the environment during their manufacturing to those that help restore natural ecological functions to your landscape, and even reduce the need for supplemental water, fertilizer, pesticides, and toxic chemicals or coatings.

landscape materials

Decorative? Naturally. But your home's landscape also matters for financial reasons, as well. The right landscape can increase a home's value by 15%, according to the Association of Landscape Contractors of America. Most people think that "landscape" simply means plants. But consider the many other elements outside of your home: decks or patios, walkways, parking areas, fences, rockeries—all contribute to the way your home presents itself to the world. If any of these elements are chosen without proper care, they can create a variety of problems, from lessening your home's street appeal to releasing toxic chemicals, increasing the likelihood of flooding and polluting the greater environment.

Fortunately, you can enhance how your property looks and functions with landscape materials that are safe for both you and the environment. You'll find ecologically superior products in a range of styles, to complement your home and personal tastes. This guide will help you identify the landscape materials that meet your personal mix of priorities.

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Remodeling your home as well as your landscape?

See the Green Home Remodel series for tips. You'll find them online at www.seattle.gov/sustainablebuilding or call

(206) 615-0731 for paper copies.



rethink remodel

Green landscape remodeling requires a new approach to the remodeling process, with more initial planning to take advantage of opportunities that might be otherwise missed with a conventional approach. This includes expanding your list of objectives as well as the way you compare the price of products—taking wide-angle and long-term views of decisions. It also means being willing to invest time and energy to find solutions that best fit your needs. And finally, it means approaching your project with health and safety as priorities. This advance planning will pay large dividends in terms of long-term satisfaction and cost containment.

Outdoor space expands your living area without the hassle and expense of adding square footage to your home. Requiring no heating or cooling, this “outdoor room” addition is easier on the environment. The U.S. Environmental Protection Agency (EPA) estimates that on average, Americans spend more than 90% of their lives indoors, and that indoor air is often four times as polluted as outdoor air. So consider outdoor living an investment in your health, as well as in your home’s value!

Decide What You Want

Planning a landscape remodel can elicit equal parts excitement and terror. Where do you begin? Generally, the more you can stick with the existing landscape’s features, the less you’ll spend on your project. By identifying your priorities and considering options carefully, you can make sure that your landscape material choices meet your goals. Consider the following when determining your landscape project objectives:



Health & Safety

Does the design encourage the use of low-toxic materials and products, for both installation and maintenance? Are materials chosen to reduce the risk of slips and other accidents?

Durability

Will the products stand up to use over time? Are they right for the job at hand? Are they covered by sufficient warranties?

Reduced Maintenance

Will the materials or products result in less work over time? Are they easy to clean and maintain without chemicals or toxic finishes? Do they resist decay and moss without chemicals?

Functionality

Are the materials well suited to their intended purpose? Do they have the necessary qualities for the job? Can they be reused for another task? Do the materials serve multiple functions? For example, can those pavers serve as a walking surface and allow rainwater to safely infiltrate into the subsoil?

Beauty

Do the materials appeal to you? Will they stand up to the test of time, aesthetically? Do they enhance nearby elements, including your home?

Accessibility

Do the materials reduce or remove barriers to people with varied abilities, ages and sizes? Do they help orient the user, mark transitions and boundaries, and facilitate the safe, easy passage of wheelchairs or other mobility-assisting devices?

Ecological Benefit

Do the materials enhance and protect the natural environment? Do they help absorb or retain storm water and protect water quality? Do they help conserve water? Are they free of toxins that can leach into the soil, water, or air? Are they manufactured locally? Do they contain recycled content? Are they readily reusable or recyclable?





Expand Your Definition of *Cost*

Initial price gives only a peephole view of a product's true cost. A higher purchase price can actually mean a better deal in the long run. This is especially true for landscape materials, which are exposed to extreme conditions—from being driven over to months of rain and even freezing temperatures. Focus on a product's durability and ease of upkeep, not just initial price. That “bargain” now may translate into frequent replacement and costly maintenance down the road.

Consider, too, factors other than monetary savings. A product's price tag rarely includes environmental and social costs. Research can uncover some of these hidden costs, and help you make more informed choices. By asking questions of retailers and avoiding suspect products, you're sending a market signal that these “big picture” costs matter, as well.

Do Your Homework

Research helps you ask retailers, or your designer/contractor, the right questions—or avoid costly mistakes if you are doing the work yourself. Finding green products can sometimes be a challenge, but is becoming easier as more enter the marketplace. Start early to look for businesses that carry the products you like. Keep a file of contact names

Photo lower left: © Jacqueline Koch. Photo opposite, bottom: Built Green™ Idea Home, designed by Mithun and built by Bennett Homes.



and businesses, as well as magazine and newspaper clippings. Identify all the materials you'd like to use for your landscape, down to product brands and specific material types. This will help you determine their cost and availability, while avoiding expensive, last-minute decisions. Find out how long it takes to special-order items, and factor in extra time to find salvaged materials, if they are going to be part of your plan. The internet can be a great place to start when searching for information and products—but be aware of biases in information sources. The line between sales pitch and factual information can be quite blurry on the web (and in person, for that matter).

Universal Design Benefits Everyone

Beyond basic accessibility issues, Universal Design creates flexible, adaptable spaces that welcome users of all ages, sizes and abilities. Universal landscape design strategies minimize the risk of injury and help all users enjoy your garden. For general tips on how to make your landscape useful to a wider variety of users, visit www.lowes.com and click on *How-To*, then *Universal Design*.



Want to learn more?

Go to www.seattle.gov/sustainablebuilding and click on Green Home Remodel for an extensive resource list related to topics in this guide.





the larger landscape

A landscape is much more than the materials it houses. Before diving into material selection, focus on your overall landscape design and how it functions. Make a thorough assessment by considering everything from soil preparation, plant selection, and watering techniques to how storm water flows through your property, landscape maintenance and code compliance.

Natural Lawn & Garden Care

Few people realize that almost every landscape decision you make regarding soil conditions, the planting scheme, watering and maintenance practices bears human health, financial, and ecological implications. By choosing a landscape design with plants that thrive naturally in your yard's particular conditions, you'll save time and money—as well as creating an outdoor space that's healthier for your family, pets, wildlife, and environment. For expert tips on creating a naturally trouble-free landscape, turn to the Seattle's *Natural Lawn & Garden* guides, which include:

- *Natural Yard Care* (the overview introducing the five key steps)
- *Growing Healthy Soil*
- *Choosing the Right Plants*
- *Smart Watering*
- *Natural Pest, Weed, & Disease Control*
- *Composting at Home*, and
- *Natural Lawn Care*.

To receive guides and the companion Plant List, see *Resources*.

Rainwise Landscaping

Especially in rainy Western Washington, it's important to consider how landscape design affects your downhill neighbors, as well as local creeks, lakes, bays and Puget Sound. How do residential landscapes influence water habitat? Hard surfaces shed water, rather than letting it soak into the ground. This allows toxic substances in preservatives, finishes, and some metals to leach into our water, even from landscapes miles from the nearest water body. Seattle storms can scour creeks of native life, cause flooding, and overwhelm parts of our storm water management system—resulting in the release of untreated sewage into local water bodies. Luckily, there are ways to reduce or avoid these problems altogether.

Various landscaping techniques help capture, cleanse, and allow rainwater to filter into the soil. These include rain gardens, pervious paving and pathways, downspout dispersion, proper soil preparation with compost, and mulching. Handling rainwater on site reduces the strain on our stormwater management systems and urban creeks. To learn more about rainwise landscaping techniques, see *Resources* on page 20.

Hardscape Maintenance

Make environmentally friendly maintenance a priority in your new landscape. This includes surfaces that are easy to clean with a broom or brush, and avoiding materials that require repainting or chemical treatment. Selecting naturally rot-resistant and durable materials in the first place makes for easier maintenance down the road. Call (206) 615-0731 for information on fish-friendly landscape maintenance.

Code Compliance

Address any building or land use-related code issues your project may encounter (decks, large sheds and other outbuildings, and retaining walls commonly require permits). To help homeowners and businesses comply with building codes, Seattle's Department of Planning and Development has assembled a series of Client Assistance Memos (CAMs); for more information, see *Resources* on page 20. If you have building or land-use code-related issues or need to determine whether your project requires a permit, contact the Seattle Department of Planning and Development's Applicant Services Center at (206) 684-8850.



patios, walkways and paths





Walkways provide home and garden access. Well-designed walkways create a safe and attractive route of travel. There are many ways to lay a path from Point A to Point B. Salvaged materials make prime candidates for patios and walkways, outlined in the table on pages 7 and 8. Find salvaged materials sources by visiting www.seattle.gov/sustainablebuilding and clicking on *Green Home Remodel*, then *Salvage & Reuse*.






In order for walkways and patios to last, you must consider much more than their surface materials, however. Especially when designing for rain to percolate into the soil below, the surface—and structure below the surface, including sand, crushed rock, etc.—must be carefully prepared. For some materials, such as *pervious pavers*, professional installation is highly recommended to ensure a long-lasting and properly functioning system.



*Questions about natural lawn and garden practices?
Call the Lawn & Garden Hotline at (206) 633-0224
or email info@lawnandgardenhotline.org*

patio, walkway & path choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<p>Poured Concrete with Fly Ash</p> 	<p>Concrete is a mix of Portland cement, sand, and aggregate (gravel). Portland cement is created in an energy-intensive process, in which clay and limestone are mixed and heated to nearly 2700 degrees Fahrenheit, releasing large amounts of carbon dioxide (a greenhouse gas) along with toxic substances such as mercury, lead, and arsenic. Cement, activated by water, binds the concrete mix together, creating a long-lasting surface.</p> <p>Reduce the negative environmental impact of this landscaping material by using fly ash (a byproduct of coal-fired energy production) for up to 50% of the cement used in the concrete mix.</p> <p>Tips: Consider poured-in-place concrete only in applications where you're certain it will satisfy long-term functional and aesthetic needs-pavers and other moveable materials make a better bet for an adaptable landscape design. Using fly ash can increase concrete cure times; consult with a concrete supplier. Concrete mixes can also incorporate recycled products, such as crushed concrete, replacing a portion of the conventional aggregate. Use reusable concrete forms.</p>	<p>extremely durable even surface good for wheelchair and mobility-impaired accessibility</p>	<p>extremely energy-intensive to produce (for every ton of cement produced, approximately one ton of carbon dioxide is released!)</p> <p>impervious surface; increases storm water runoff</p> <p>impossible to reconfigure once poured</p>
<p>Broken Concrete</p> 	<p>Broken concrete from demolition projects is commonly available year-round, usually free if you can haul it yourself, or delivered for a fee. Broken concrete can be laid similar to stone or other pavers, to create a flagstone-like path.</p> <p>Tips: Look for broken concrete from sidewalk and pathway demolition projects so pieces are both light enough to move with relative ease and of roughly the same depth; this helps with laying the pieces.</p>	<p>extremely durable reusable; can be reconfigured</p> <p>rainwater can be absorbed between pieces of concrete, reducing runoff</p>	<p>uneven surface can be difficult for wheelchair travel</p>
<p>Permeable or Salvaged Concrete Pavers</p> 	<p>Concrete paving creates impervious surfaces that increase stormwater runoff. Look for interlocking concrete pavers in permeable designs that allow rain to seep between the pavers. Also consider installing conventional salvaged pavers to allow for rain infiltration.</p> <p>Tips: Salvaged concrete pavers are sometimes available at used building materials retailers or the Household Online Materials Exchange (see Resources on page 20). Manufacturers of permeable concrete paving systems recommend professional installation for proper functioning.</p>	<p>reusable; can be reconfigured</p> <p>extremely durable</p> <p>can allow water to filter into soil, reducing runoff</p>	<p>permeable pavers make a difficult do-it-yourself project; most manufacturers require professional installation</p>
<p>Recycled Glass Pavers</p> 	<p>Recycled glass is re-melted into forms, creating hefty, translucent pavers; can be laid similar to concrete pavers, or interspersed as accent pieces with traditional stone or concrete products. Due to their recycled content, glass pavers require roughly half the energy necessary to create new, similarly performing concrete pavers.</p> <p>Tips: Look for locally produced glass pavers to support the market for recycled glass products.</p>	<p>durable</p> <p>up to 100% recycled content</p> <p>energy-efficient manufacturing</p> <p>locally available</p> <p>reusable; can be reconfigured</p>	<p>uneven surface can be difficult for wheelchair travel</p>



MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<p>Salvaged Clay Brick</p> 	<p>Made by forming and drying clay, bricks are then fired in kilns at temperatures up to 2000 degrees Fahrenheit. Brick production is a major source of air pollution in some developing countries, because of wood-fired kilns. Most domestic manufacturers use much cleaner-burning natural gas.</p> <p>Tips: Salvaged brick is available from used building materials suppliers, salvage yards, online exchanges and newspaper classifieds-or right at home. If not enough salvaged brick is available for your project, look for local, or at least domestic, brick sources.</p>	<p>reusable; can be reconfigured</p>	<p>cleaning mortar from salvaged brick is time-consuming</p>
<p>Salvaged Stone</p> 	<p>Quarried and fabricated around the world; quarrying practices and transport means create environmental impacts. Salvaged stone eliminates these impacts by reusing materials already produced.</p> <p>Tips: Look for sources of salvaged stone for least environmental impact. Alternatively, find local sources of stone, and ask about quarrying practices.</p>	<p>reusable; can be reconfigured</p>	<p>can be difficult to find amounts of a single stone to finish a larger project</p>
<p>Crushed Quarry Rock</p> 	<p>Crushed quarry rock extracted from inland quarries is generally less damaging to the environment than gravel operations, which often disrupt more sensitive land near streams and lakes. Also, nearly 100% of stone from a quarry is used, whereas substantial waste occurs with gravel operations.</p> <p>Tips: Look for local sources quarried away from lakes and streams. Take care to lay crushed rock properly for stormwater infiltration: See Anne Lovejoy's Organic Garden Design School (see Resources) for information.</p>	<p>weed barrier absorbs stormwater even surface good for wheelchair accessibility</p>	<p>not recycled</p>
<p>Wood Chips</p> 	<p>Chipped on site or available from tree services and landscape materials suppliers, wood chips utilize an urban waste source.</p> <p>Tips: Arborists and tree services will sometimes drop off chips for free or a small fee; you can also rent wood chippers to make a homemade path.</p>	<p>recycled content resilient surface can reduce risk of injury in falls composts over time</p>	<p>degrades over time; must be replenished</p>
<p>Nutshells</p> 	<p>Nut processors generate large volumes of nutshells seasonally. Hazelnuts are regionally produced. Shells are often burned for fuel; using them for mulch and pathways reduces the amount of burning and protects air quality.</p> <p>Tips: Look for regional sources; mainly from Oregon. Nut processing occurs October through December; look for them while they're in season.</p>	<p>recycled content effective at controlling weeds composts over time</p>	<p>degrades over time; must be replenished availability limited to nut processing season</p>
<p>Tumbled Recycled Glass</p> 	<p>Glass bottles from recycling processors are broken and tumbled to create beach-style glass without sharp edges.</p> <p>Tips: Look for local manufacturers. Tumbled glass is also useful for accent material in pots and water features.</p>	<p>recycled content lasts indefinitely reusable locally available</p>	<p>can look messy over time</p>

mulch materials

Mulches are a layer of organic material placed around plants to inhibit weed growth, minimize soil erosion and runoff, reduce watering needs by keeping soils moist, and define areas. Several of the same materials useful for paths (such as wood chips and nutshells) make good mulches, as well. While mulch is a landscape material, and therefore included in this guide, it's as important to use mulch correctly as it is to identify the type you'll use. The type of plants you're mulching determine the best material for the job. For tips on when, where, how, and how much to mulch, refer to the *Growing Healthy Soil* guide; see *Resources* on page 20 for details.



mulch choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
Compost 	<p>Yard waste and other organic materials decompose to create a dark, crumbly, earthy material. After used as mulch, compost can be worked into the soil to feed and enhance plants and soil life.</p> <p>Tips: Make your own compost at home (see <i>Resources</i> on page XX), or purchase from local suppliers.</p>	<ul style="list-style-type: none"> recycled content improve soil quality can be produced on site, or ordered from local suppliers 	<ul style="list-style-type: none"> weeds germinate more readily than in finer textured mulches
Leaves 	<p>Fall leaves make excellent mulch, decomposing quickly; a free annual supply is guaranteed.</p> <p>Tips: Shred leaves with a mower, or use them whole. Evergreen leaves take longer to decompose; some leaves, such as Rhododendron, are poisonous.</p>	<ul style="list-style-type: none"> improve soil quality free reduce winter soil erosion insulate plant roots from cold 	<ul style="list-style-type: none"> if left whole, may blow around
Wood Chips 	<p>See description and tips in <i>Patio, walkway & path choices</i> on page 8. Do not use chips you suspect came from chemically treated lumber or diseased trees.</p>	<ul style="list-style-type: none"> natural look low cost 	<ul style="list-style-type: none"> may spread weeds and disease
Nutshells 	<p>See description and tips in <i>Patio, walkway & path choices</i> on page 8.</p>	<ul style="list-style-type: none"> natural look low cost 	<ul style="list-style-type: none"> hard on bare feet

Compost: More Than Just Mulch


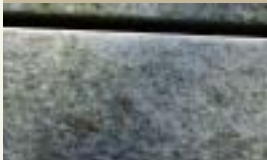
Adding compost when preparing garden, lawn, or plant bed soil encourages healthy plant growth while reducing your landscape's water, fertilizer and pesticide needs. The general rule is to incorporate between one and three inches of compost into the upper eight inches of soil. For information on soil testing, solving soil problems, or finding a compost supplier, see the *Growing Healthy Soil* guide at www.seattle.gov/util (click on *Yard*, then *Natural Lawn & Garden Care*) or call the Natural Lawn & Garden Hotline at (206) 633-0224.

decks

Inviting outdoor spaces beckon us out of the home and into the fresh air. And why not encourage as much outdoor living as our fickle Northwest weather will permit? However, decks tend to require a lot of work and maintenance. Especially if you're building close to the ground, consider whether a more durable patio of recycled masonry, broken concrete or pavers will work as well. See *Patios, walkways & paths choices* on page 7 for materials ideas. Decks over 18 inches in height require permits and railings designed to meet code. See the Seattle Department of Planning and Development's Client Assistance Memo # 312: *Decks, Fences and arbors in Single Family Homes* at www.seattle.gov/dpd (click on *Publications*, then *Client Assistance Memos*) for help.



decking choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
Wood 	<p>A global commodity, wood is used for everything from decks to raised beds and retaining walls. Landscape-application wood is normally naturally rot-resistant, or treated with preservatives to delay rot. For years, <i>chromated copper arsenate</i> (CCA) was the standard for treating wood in contact with the ground. However, health concerns over these highly toxic compounds have prompted the U.S. EPA to phase it out of residential landscape use. Wood treatments of lower toxicity, such as <i>copper azole</i> (CA-B), are now available, even through major retailers.</p> <p>Tips: Look for naturally rot-resistant species-domestics such as cedar, juniper, and cypress, or highly durable tropical woods like Ipe. Specify wood products stamped and certified by the Forest Stewardship Council (FSC) as responsibly harvested. To discourage moss growth, avoid using wood in heavily shaded areas.</p>	<p>natural material even surface good for wheelchair and mobility-impaired accessibility FSC products promote responsible forestry recyclable or compostable, if untreated</p>	<p>rots over time can attract pests like carpenter ants prone to moss and algae growth can be slippery some species require periodic painting or refinishing</p>
Recycled Plastic Lumber and Composite Lumber 	<p>Recycled plastic, usually polyethylene, is re-melted and formed into standard dimensions for decking, railings, and other applications. <i>Composite</i> recycled products mix recycled plastic with sawdust or other wood products. Added pigments create integral color, eliminating the need for paint. The properties of plastic are such that plastic lumber has limited structural capacity, requiring closer joist spacing on decks, for example. Fiber-reinforced recycled plastic lumber is available.</p> <p>Tips: Inquire about the recycled content of the product, and look for 100% recycled content.</p>	<p>durable recycled content very low maintenance lower long term cost</p>	<p>products that require closer joist spacing result in additional material higher initial cost</p>

Deck Joists and Beams

A deck's structural support depends on joists and beams, which are most commonly made of pressure-treated wood. As with treated decking, CA-B is the least toxic current alternative. Also consider *structural recycled plastic*, which uses glass fiber to enhance the structural capacities of recycled plastic timbers. Although substantially more expensive up-front than low-toxic pressure-treated lumber, structural recycled plastic ensures a long-lasting, virtually maintenance-free deck.

Foundations

Most decks rely on pier blocks or poured concrete for foundations. One product that helps reduce cement use in foundation work is the *pin foundation*. Most foundations rely on a substantial *footing*, or subsurface mass of concrete, to distribute the force of the load they support. Pin foundations replace the footing with a series of large steel pipes, which stabilize and carry the load (read more about how they work at www.pinfoundations.com). This eliminates not only the need for a traditional footing, but all the digging and concrete such a footing requires.



fences, trellises and arbors

Fences and trellises define landscape spaces, while keeping kids and pets safe. Like any other project, the material you choose should suit the application. See the Seattle Department of Planning and Development's Client Assistance Memo # 312: *Decks, Fences and Arbors in Single Family Homes in Seattle* at www.seattle.gov/dclu/Publications/cam/cam312.pdf for help determining how your project is affected by code issues. Fences serve multiple purposes-some of which can be achieved without even building a fence! For example, you can create a living screen by planting a row of shrubs, bamboo, or other plants. Herbaceous plants (varieties that die back to the ground in winter) can provide seasonal privacy.







When using wood in the landscape, look for wood certified by the Forest Stewardship Council (FSC). FSC certification ensures the wood is responsibly grown and harvested. Go to www.certifiedwood.org to learn more.



Photo left, bottom: Geoff Belau (silo ARCHITECTURE+DESIGN) and Lauren Woodward. Photo opposite, top left: Martha Rose Construction. Photo opposite, top right: © Jacqueline Koch.



fence, trellis, and arbor choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
Wood 	<p>See the <i>Decking</i> table on page 10 for description and tips on wood.</p>	<p>See <i>Decking</i></p>	<p>See <i>Decking</i></p>
Recycled Plastic Lumber 	<p>See the <i>Decking</i> table on page 10 for description and tips on recycled plastic lumber.</p> <p>Tips: Some recycled plastic lumber may not be suited to the structural needs of a fence, trellis or arbor. Be sure to choose materials that meet the structural and safety requirements of your project.</p>	<p>See <i>Decking</i></p>	<p>may not be structurally sufficient for some applications</p>
Salvaged Metal 	<p>In general, mining and processing metals damages the environment. However, because the steel and aluminum recycling markets are so strong, most of these metals contain some recycled content. Salvaged metals prove environmental favorites because they require no mining, processing, or even the energy used in recycling.</p> <p>Tips: Sheet metal, chain link fencing, metal pipes and rods, and even salvaged railings can be used for fence and trellis applications. Look for salvaged metals at industrial surplus stores and online exchanges, see <i>Resources</i> on page 20.</p>	<p>reused, reusable and recyclable</p>	<p>sharp edges can cut or puncture</p> <p>prone to rust or corrosion</p> <p>galvanized materials can leach zinc, which is toxic to aquatic life</p>
Fiber Cement 	<p>Available in panels and planks, fiber cement is a combination of cement, sand, wood fiber, and sometimes, clay. Like all products containing cement, fiber cement requires large amounts of energy to produce, which contributes to carbon dioxide emissions and global warming. Additionally, the wood fiber used in fiber cement is usually imported. Conventionally used for home siding, fiber cement is growing increasingly popular for fences.</p> <p>Tips: Make sure your fence construction will work with this material. Brittle and easily damaged, fiber cement is best used for areas with low likelihood of a run-in with a wheelbarrow, car bumper, or baseball.</p>	<p>rot-proof</p> <p>low maintenance</p> <p>holds paint longer than wood</p>	<p>easily broken or damaged</p> <p>currently not recyclable in small quantities</p> <p>suitable only for fences</p>



rockeries & raised beds

*See [Choosing the Right Plants](#)
and its companion [Plant List](#)
for help selecting water-wise
plants that can thrive in a
rockery's dry growing conditions.
See www.seattle.gov/util (click
[Yard, then Natural Lawn &
Garden Care](#)).*

Rockeries level out landscape slopes, creating more useful space. They can also reduce water use, runoff and erosion by helping water soak into the ground. Held together by their own weight and placement rather than mortar, *dry-laid rockeries* offer an ideal opportunity to reuse and reconfigure stone or broken concrete. Mortared walls are less easily reused, and if not constructed with proper drainage, can trap water—increasing the risk of wall failure.





The Seattle Department of Planning and Development provides design information for rockeries of all heights in Client Assistance Memo #321: *Rockeries: Prescriptive Design and Installation Standards*, including information on drainage design. Rockeries over 48 inches high must be permitted and follow these prescriptive standards. Note that the Department of Planning and Development distinguishes rockeries from retaining walls, which provide a retaining function to soils, while rockeries are installed in areas that are primarily self-supporting. For more information on Client Assistance Memos and permitting, see *Resources* on page 20.

Raised beds utilize *Universal Design* principles, bringing plants closer to people and allowing those who otherwise might not be able to participate in gardening to get their hands dirty. Raised beds also provide a design feature in the landscape, defining spaces and accentuating transitions.





rockery & raised bed choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
Broken Concrete 	<p>Described in <i>Patio, walkway & path choices</i> on page 7, broken concrete is a common material often available free if you pick it up, or delivered for a fee.</p> <p>Tips: Look for broken concrete from a single job, such as a driveway or sidewalk demolition (you're likely to see free piles in front yards if you keep an eye out). Chunks of concrete from one source are more likely the same depth and much easier to stack. Find broken concrete through online services and classified ads. Some object to the aesthetics of broken concrete. A stone chisel can give a more natural look to the face broken concrete, and trailing plants can camouflage its surface.</p>	<ul style="list-style-type: none"> recycled content durable reusable 	<ul style="list-style-type: none"> wide pieces take up a lot of gardening space in raised beds
Wood Timbers 	<p>The most common landscape timbers are <i>pressure treated</i> (injected with rot- and insect-inhibiting chemicals under pressure). For years, treatment with <i>chromium copper arsenate</i> was standard (see the <i>Decking</i> table on page 10 for a description of the hazards of this type of wood treatment). Naturally rot-resistant species, such as juniper, can endure ground contact without the application of toxic wood preservatives.</p> <p>Tips: Look for locally harvested products, preferably with Forest Stewardship certification. Avoid creosote-coated landscape timbers and railroad ties, which can leach toxic materials into surrounding soils.</p>	<ul style="list-style-type: none"> natural material local sources available 	<ul style="list-style-type: none"> even rot-resistant species eventually rot can harbor carpenter ants and termites
Recycled Plastic 	<p>Plastic from consumers and the automotive industry is collected, melted, and formed into 4"x4"x8', 6"x6"x8' and larger sizes. This rot-proof material can be left in direct contact with soil.</p> <p>Tips: Look for 100% recycled content. Recycled plastic products are also manufactured locally—look for products made close to home to reduce transportation-related pollution.</p>	<ul style="list-style-type: none"> durable recycled content 	<ul style="list-style-type: none"> large dimensions can be difficult to cut
Salvaged Stone 	<p>See <i>Patio, walkway & path choices</i> on page 7 for a description of salvaged stone.</p> <p>Tips: Landscapes being renovated or redesigned can be a source of salvaged stone. Online exchanges and classified ads are good places to look; see <i>Resources</i> on page 20.</p>	<ul style="list-style-type: none"> natural material reused 	<ul style="list-style-type: none"> can be difficult to find quantities of one kind for a large job



found objects

The materials selection tables above outline many reused items to incorporate into your landscape, but many others exist, as well. Salvage and found objects add personality and a sense of history to your landscape-while taking some of the burden off local landfills.

Flex your creative muscle by salvaging. A trip to a building materials salvage store or industrial surplus yard can yield ready-made art by the pound, or elements you can assemble into a truly one-of-a-kind landscape feature. Garden art takes endless forms, limited only by your imagination. Best of all, you can find salvaged materials for virtually all types of landscape projects, if you know where to look. King County's Online Materials Exchange at www.metrokc.gov/dnrp/swd/exchange/ provides an excellent source of reuse materials, with categories for landscaping, siding, lumber, drainage and erosion control, concrete, masonry and more. Local classifieds also provide fruitful sources for salvaged materials.

When using salvaged materials, beware lead-based paints, toxic wood preservatives, and other hazards. Ask questions of the person giving away or selling the material; if in doubt, pass on suspect items. You'll find an abundance of salvaged materials out there so make safety a priority.

Commonly available salvaged materials include:

- Concrete. Described in *Patio, walkway & path choices* on page 7, broken concrete can function as a patio, walkway or rockery. Salvage it from your own walkway or patio demolition, or find it in your neighborhood. Alternatively, demolition companies and concrete recyclers may deliver a load for a fee.
- Stone and brick. Described in *Patio, walkway & path choices* on page 7, these materials are plentiful, thanks to continual building and landscape renovations. Stone and brick is available at used building materials stores and salvage companies. They're also common materials on King County's Online Materials Exchange.
- Metal. Give your yard texture and function with everything from industrial surplus sheet metal to vintage wrought iron gates. Industrial salvage yards and scrap yards are good sources of metal.
- Architectural elements. Create a landscape focal point with masonry, concrete or terra cotta architectural salvage. These elements tend to be higher-end; find them at building salvage stores and even antique stores.



Photo top and bottom left: © Jacqueline Koch.



sheds & greenhouses

Comprised of many elements, garden sheds define their own category. Store-bought kits make assembly a cinch, but these sheds are usually not constructed of green materials. The small nature of sheds, greenhouses, cold frames and other outbuildings makes them perfect candidates for salvaged materials. In fact, you can reuse an entire shed if you find one available. Look for shed materials at King County's Online Materials Exchange at www.metrokc.gov/dnrp/swd/exchange/ as well as local classified ads and used building materials stores. Many elements of a shed can be found reused, from sheathing and windows to roofing and dimensional lumber. The only limitation is your imagination—and perhaps your vehicle!

If you're purchasing new wood and/or plywood for your project, consider *Forest Stewardship Council* (FSC) certified wood. This independent organization's stamp of approval signifies wood harvested and processed in an environmentally and socially responsible manner. To ensure you're getting the real thing, look for the logo on the products you're buying. By buying FSC wood products, you support and protect the vitality of our forests.

Be sure to research whether your shed will require a permit, and that it complies with Seattle's codes for setbacks from neighboring properties. In general, structures with roof area smaller than 120 square feet do not require a permit. If you have questions about a structure you're considering for your Seattle backyard, call the Department of Planning and Development's Building Code Technical Support line (Monday through Friday, 1:00 to 4:15 pm) at (206) 684-4630.

Conventional foundations and concrete slabs require large amounts of cement, a material that's extremely energy-intensive to produce. See the *Decks* on page 10 for more about *pin foundations*, an alternative to slabs and conventional foundations.

*Look for salvaged shed and
greenhouse materials on
King County's Online
Materials Exchange at
[www.metrokc.gov/dnrp/
swd/exchange/](http://www.metrokc.gov/dnrp/swd/exchange/)*



irrigation systems

Homeowners looking for convenience and cost savings often think an irrigation system will provide both. However, according to the Irrigation Association, even the most efficient automatic sprinkler systems waste a minimum of 30 percent of the water they deliver. Without proper maintenance (experts recommend at least annual inspection) systems become even less efficient over time. And any type of irrigation system can be wasteful if the water doesn't get where it's needed (the plant's *root zone*), when it's needed.

The Washington State Department of Health requires that all irrigation systems include *backflow prevention*-devices to keep irrigation system water from entering the municipal water supply-and systems should be inspected annually by the water provider. If you have questions about backflow prevention on a Seattle property, call Seattle Public Utilities at (206) 684-3456. If you decide to purchase an automatic in-ground system, use a *certified irrigation designer and contractor* to design, install, and maintain it for maximum efficiency. Contact the Irrigation Association at www.irrigation.org or the Washington Association of Landscape Professionals at www.walp.org for certification information.

It's possible to design a landscape to minimize the need for regular supplemental watering once it is established. Weigh your priorities (economic, environmental, and personal) and consider landscape designs and plant choices that eliminate the need for an automatic, in-ground irrigation system. Look to the *Natural Lawn & Garden* series for tips on water-wise plant selection, design, and maintenance. The series is available at www.seattle.gov/util (click on *Yard*) or by calling the Natural Lawn & Garden Hotline at (206) 633-0224.

If you have an existing permanent irrigation system within Seattle, water efficiency incentives may be available from Seattle Public Utilities. For help with increasing the efficiency of an existing system, go to www.seattle.gov/util (click on *Yard* and then *Natural Lawn & Garden Care*) for irrigation and sprinkler tips. For information related to new irrigation systems visit the Irrigation Association at www.irrigation.org and go to *Search* and *Consumer Info*.

Permanent In-Ground Irrigation Systems

Pipe Materials. In-ground irrigation systems commonly rely on pipe made from *polyvinyl chloride* or PVC. Recent research raises questions about vinyl's impact on human health and environmental safety. *Polyethylene* is an increasingly available PVC alternative used in the irrigation and plumbing industry.

Irrigation Controllers. Also called *clocks* or *timers*, these devices control the time an irrigation system operates and the amount of water it uses. The most efficient controllers automatically adjust to changing plant water needs. See *Product Specifications* at www.savingwater.org/outside_sprinklers.htm to learn about important water saving controller features.

Soaker Hoses

These hoses look like a black garden hose, but are made of a porous material and are capped at the end, allowing the water to slowly leak into the soil along the entire length of the hose. When used correctly, soaker hoses are an efficient way to water, and reduce the incidence of plant disease too. See www.savingwater.org/docs/soakerhose.pdf for tips on efficient use. Many soaker hoses are made from recycled plastic.

Garden Hoses

Most garden hoses are made from various forms of plastic, including PVC (see discussion above about PVC). Reinforced rubber hoses are generally considered the most durable option. (Although they tend to be heavier and more awkward than their PVC cousins.) Many hoses also contain recycled content plastic, an environmental plus. No matter what material your hose is made of, avoid drinking from a garden hose. Hoses can siphon contaminants from standing water or breed bacteria within a warm hose, along with leaching chemicals from the hose itself.



rainwater harvest

We spend so much time getting water away from our homes that we often fail to see rain as a valuable asset—delivered right to us for free. Excessive amounts of rainwater diverted into storm or sewer systems can damage local creeks, cause flooding, and impair water quality. But what if you could use that water to benefit your home or garden? You can—in a multitude of ways.

Roof rainwater can be stored for later use outdoors in the yard. Rain barrels are popular, but their small size makes them more educational than instrumental in minimizing your city-supplied water use. This is especially true in July through September, when weeks without rain mean your rain barrel doesn't refill. See the Seattle Public Utilities web page at www.seattle.gov/util (click on *Yard*, then *Natural Lawn & Garden Care*) for a list of retailers and use instructions, plus links to other rain barrel sources.

Cisterns are large tanks (commonly plastic, but also concrete and fiberglass) commonly used in agriculture to store large quantities of liquids, and are available locally through industrial pipe suppliers and farmers' co-ops. Cisterns store from several hundred to thousands of gallons of water, enough to significantly reduce or even eliminate the need to use municipal water for landscape purposes, especially when combined with the use of water-wise plants. Cisterns can offer the added benefit of helping regulate storm water runoff during the winter months, when landscape water isn't needed. By incorporating a valve in the base of the tank, rainwater captured during the winter can slowly and safely drain from the tank over time. To store water for summer use, simply close the valve. *The Texas Guide to Rainwater Harvest* provides an excellent overview of all aspects of rainwater harvest and storage: www.twdb.state.tx.us/publications/reports/RainHarv.pdf.

You can also put that roof water directly to use in your yard with a rain garden. These landscape elements feature plants that thrive in wet conditions coupled with soils that allow safe ground percolation. Rain gardens must be carefully designed and located to avoid flooding and causing damage to your home or neighboring properties. For more on rain gardens, rainwater harvest, and other rainwise landscaping practices, call (206) 615-0731.



accessories

Let your creativity reign when it comes to landscape accessories. Fortunately, you can find a green alternative for almost any design element. As a general rule, keep things simple. You'll have less to buy, maintain, and deal within the long run. Common landscape accessories include lawn and patio furniture, pots and planters, and lighting.

Furniture

Lawn and patio furniture comes in all shapes and sizes. In addition to aesthetics and durability, focus on environmental performance. If possible, outdoor furniture should be stored in a dry location for the winter. If not, make rot-resistance a priority. Green materials choices for outdoor furniture include naturally rot-resistant, responsibly harvested wood certified by the FSC (see page 11), as well as recycled-content plastic.

Rot-resistant wood is a good option for outdoors, but many species of wood are over-harvested—especially many tropical hardwoods known for their durability, such as teak. Other species with similar rot resistance, such as eucalyptus, are available with FSC certification.

Another popular material for outdoor use? Plastic, especially *polyvinyl chloride* (PVC). Debate continues, however, on the human and environmental effects of PVC production and disposal. Moreover, recycling opportunities for PVC consumer products are essentially nonexistent at this time. PVC-free alternatives exist, however, including a wide variety of outdoor furniture with recycled content, which makes use of materials otherwise destined for the landfill. California's Integrated Waste Management Board maintains a Recycled Content Product Database, including a section on outdoor furniture; go to www.ciwmb.ca.gov/RCP/ and click on *Furniture and Accessories*.

Pots and Planters

Add flexibility and seasonal color to the landscape with pots and planters. Best of all, it's easy to be environmentally responsible with these design elements. You can find planters fabricated from a wide variety of materials, including materials suitable for decking; see the *Decks* on page 10. For a list of planters and pots with recycled content, go to www.ciwmb.ca.gov/RCP/ and click on *Agriculture & Landscape*, and then *Planters*.

Lighting

Improve the safety and security of your landscape with outdoor lighting. However, excessive landscape lighting can waste energy and result in light pollution, disrupting neighbors and reducing the ability to see nighttime stars. A careful lighting scheme reduces light pollution while providing just enough light for safety and security. The International Dark Sky Association maintains a simple sheet at www.darksky.org/infoshts/pdf/is186.pdf describing strategies for reducing light pollution. *Low-voltage* outdoor lighting systems usually consume less energy and are safer to operate than lighting operating on regular household current.

Avoid increased energy costs related to outdoor lighting, as well as the expense of hardwiring conventional outdoor lights, with solar lighting. Available in many styles, solar-powered landscape lights store energy accumulated during the day in batteries, and then provide low-level light at night. In general, solar garden lights provide a limited amount of light—enough to mark a trail but not enough to illuminate activities.

Photo top left and bottom left: © Jacqueline Koch. Photo opposite, third from top: Built Green™ Idea Home, designed by Mithun and built by Bennett Homes.

resources

Print

- *Anne Lovejoy's Organic Garden Design School* by Anne Lovejoy (Rodale Press, 2001). An excellent introduction to landscape design, with a goal of a trouble-free garden that works with nature.
- Order the Natural Lawn & Garden Care series of guides and/or companion Plant List by calling the Natural Lawn & Garden Hotline at (206) 633-0224, or emailing info@lawnandgardenhotline.org
- Request paper copies of Client Assistance Memos (CAMs) and permitting information by visiting the 20th floor of the Seattle Municipal Tower (located at 700 5th Avenue, just north of Seattle City Hall).

Websites

- Download the *Natural Lawn & Garden* guides and/or companion *Plant List*, or order printed copies by going to www.seattle.gov/util and clicking on *Yard*.
- A resource list companion to this guide is also available. Find it and other guides in the *Green Home Remodel* series (including Bath & Laundry, Kitchen, Roofing, Painting, Salvage & Recycling, and Hiring a Pro), see www.seattle.gov/sustainablebuilding and click on *Green Home Remodel*.
- For Client Assistance Memos (CAMs) and permitting information, visit the Seattle Department of Planning and Development online at www.seattle.gov/dpd/camlist/camlist.asp
- Looking for salvaged landscaping materials? Check out the King County's Online Materials Exchange at www.metrokc.gov/dnpr/swd/exchange/

Hotline

Get personalized answers to your natural landscaping questions by contacting the Natural Lawn & Garden hotline at info@lawnandgardenhotline.org or calling (206) 633-0224.



This brochure was developed by the Seattle Public Utilities Sustainable Building Program, with the assistance of Seattle Public Utilities Resource Conservation staff.

This information can be made available on request to accommodate people with disabilities and those who need language assistance.





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