

{ 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 goals of making your house look and 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 selecting landscape materials, you realize health benefits as well as peace of mind. Most people don't realize that many landscape elements contain toxic chemicals, that 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 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.

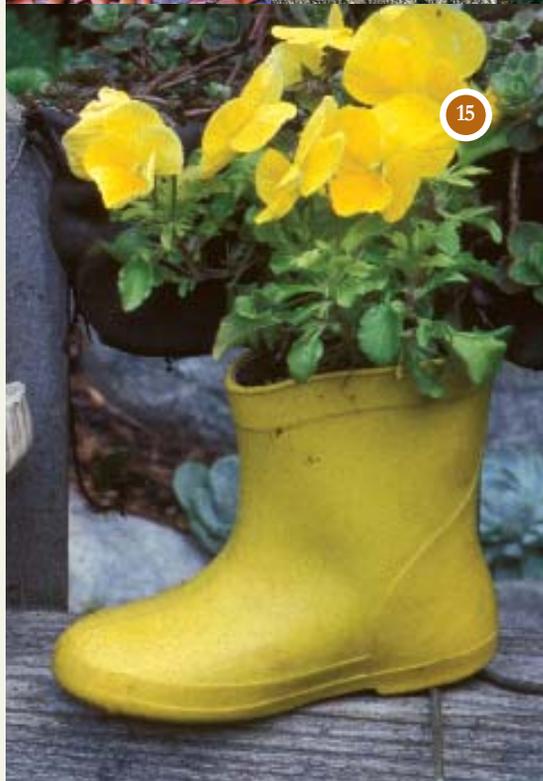
Fortunately, you can enhance how your property looks and functions with landscape materials that are safe for both you and the environment. You'll find ecologically superior products in a range of styles, to complement your home and personal tastes. This guide will help you identify the landscape materials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

Cover photo and above: © Jacqueline Koch.



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# rethink remodeling

*Remodeling your home as well as your landscape?*

*See the Green Home*

*Remodel series for tips.*

*You will find them on-line*

*at [www.ecy.wa.gov/programs/](http://www.ecy.wa.gov/programs/snfa/greenbuilding)*

*snfa/greenbuilding.*

Green landscape remodeling requires a new approach to the remodeling process. It involves 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:





<b>Health &amp; Safety</b>	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?
<b>Durability</b>	Will the products stand up to use over time? Are they right for the job at hand? Are they covered by sufficient warranties?
<b>Reduced Maintenance</b>	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?
<b>Functionality</b>	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?
<b>Beauty</b>	Do the materials appeal to you? Will they stand up to the test of time, aesthetically? Do they enhance nearby elements, including your home?
<b>Accessibility</b>	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?
<b>Ecological Benefit</b>	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 freezing temperatures. Focus on a product's durability and ease of upkeep, not just initial price. That "bargain" now may translate into frequent replacement or 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, designers, or contractors the right questions. It also helps 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 and businesses, as well as magazine and newspaper clippings.

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



Identify the materials you'd like to use for your landscape, from product brands to 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. 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.

### 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](http://www.lowes.com).



*Want to learn more?*

*Go to [www.ecy.wa.gov/programs/snfa/greenbuilding](http://www.ecy.wa.gov/programs/snfa/greenbuilding) 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 soil preparation, microclimates, plant selection, watering techniques, landscape maintenance, code compliance, and how stormwater flows through your property.

## Natural Lawn & Garden Care

Few people realize that almost every landscape decision they 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. You also create 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 order these guides and the companion Plant List, see Resources, on page 19.

## 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. 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.

## 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. Avoid 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. See *How to Maintain a Fish-Friendly Home* at [www.obrienandco.com/downloads/HowToShopforaFishFriendlyHome.pdf](http://www.obrienandco.com/downloads/HowToShopforaFishFriendlyHome.pdf)

## Code Compliance

Address any building or land use-related code issues your project may encounter, such as decks, large sheds and other outbuildings. Retaining walls commonly require permits. If you have building or land-use code-related issues or need to determine whether your project requires a permit, call your local city or county Planning and Development services center.





# 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.ecy.wa.gov/programs/swfa/greenbuilding](http://www.ecy.wa.gov/programs/swfa/greenbuilding) and clicking on *Green Home Remodel*, then *Salvage & Reuse*.

To ensure walkways and patios last, consider more than just their surface materials. When designing for rain to percolate into the soil below, the surface and structure below the surface 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 e-mail [info@lawnandgardenhotline.org](mailto:info@lawnandgardenhotline.org)*

# patio, walkway, and path choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<p><b>Poured Concrete</b></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>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. 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!) impervious surface; increases storm water runoff impossible to reconfigure once poured</p>
<p><b>Broken Concrete</b></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 rainwater can be absorbed between pieces of concrete, reducing runoff</p>	<p>uneven surface can be difficult for wheelchair travel</p>
<p><b>Permeable or Salvaged Concrete Pavers</b></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. Manufacturers of permeable concrete paving systems recommend professional installation for proper functioning.</p>	<p>extremely durable reusable; can be reconfigured 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><b>Recycled Glass Pavers</b></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 reusable; can be reconfigured up to 100% recycled content energy-efficient manufacturing locally available</p>	<p>uneven surface can be difficult for wheelchair travel</p>

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<p><b>Salvaged Clay Brick</b></p> 	<p>Made by forming and drying clay, bricks are 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><b>Salvaged Stone</b></p> 	<p>Quarried and fabricated around the world; quarrying practices and transport means create environmental impacts. Salvaged stone eliminates these impacts by reusing materials.</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><b>Crushed Quarry Rock</b></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.</p>	<p>weed barrier absorbs stormwater even surface good for wheelchair accessibility</p>	<p>not recycled</p>
<p><b>Wood Chips</b></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><b>Nutshells</b></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, so 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><b>Tumbled Recycled Glass</b></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

Mulch is 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.



## mulch choices

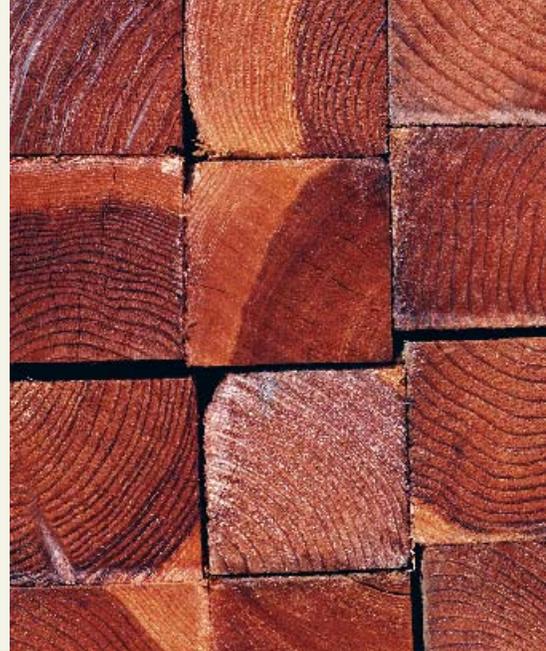
MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<b>Compost</b> 	<p>Yard waste and other organic materials decompose to create a dark, crumbly, earthy material. After used as mulch, compost can be worked into the soil to feed and enhance plants and soil life.</p> <p>Tips: Make your own compost at home or purchase from local suppliers.</p>	<ul style="list-style-type: none"> <li>recycled content</li> <li>improve soil quality</li> <li>can be produced on site, or ordered from local suppliers</li> </ul>	<ul style="list-style-type: none"> <li>weeds germinate more readily than in finer textured mulches</li> </ul>
<b>Leaves</b> 	<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"> <li>improve soil quality</li> <li>free</li> <li>reduce winter soil erosion</li> <li>insulate plant roots from cold</li> </ul>	<ul style="list-style-type: none"> <li>if left whole, may blow around</li> </ul>
<b>Wood Chips</b> 	<p>See description and tips in patio, walkway and path choices on pages 7 and 8. Do not use chips you suspect came from chemically treated lumber or diseased trees.</p>	<ul style="list-style-type: none"> <li>natural look</li> <li>low cost</li> </ul>	<ul style="list-style-type: none"> <li>may spread weeds and disease</li> </ul>
<b>Nutshells</b> 	<p>See description and tips in patio, walkway and path choices on pages 7 and 8.</p>	<ul style="list-style-type: none"> <li>natural look</li> <li>low cost</li> </ul>	<ul style="list-style-type: none"> <li>hard on bare feet</li> </ul>

### Compost: More Than Just Mulch

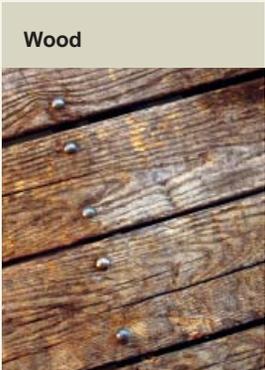
Adding compost when preparing garden, lawn, or plant bed soil encourages healthy plant growth while reducing your landscape's water, fertilizer, and pesticide needs. The general rule is to incorporate between one and three inches of compost into the upper eight inches of soil. The Washington State University Cooperative Extension system has Master Gardener Programs throughout the state. To locate a Master Gardener Program in your county go to <http://mastergardener.wsu.edu/mgoc/mgoc.html>.

# 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, wood decks tend to require a lot of work and maintenance. 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 and path choices on page 7 and 8 for material ideas. Typically, decks over 18 inches in height require permits and railings designed to meet code. Check with your local city or county Planning and Development departments for code requirements.



## decking choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
 <p><b>Recycled Plastic Lumber</b></p>	<p>Plastic, usually polyethylene, is re-melted and formed into standard dimensions for decking, railings, and other applications. The properties of plastic are such that plastic lumber has limited structural capacity, requiring closer joist spacing on decks. Fiber-reinforced recycled plastic lumber is available.</p> <p>Tips: Inquire about the recycled content of the product, and look for 100% recycled plastic content. 100% recycled plastic products can be recycled.</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>
 <p><b>Wood</b></p>	<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, chromated copper arsenate (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 copper azole (CA-B), are now available, even through major retailers.</p> <p>Tips: Look for local rot-resistant species such as cedar, juniper, and cypress. Specify wood products stamped and certified by the Forest Stewardship Council (FSC) as responsibly harvested.</p> <p>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>
 <p><b>Composite Lumber</b></p>	<p>Composite recycled products mix recycled plastic with sawdust or other wood products. Added pigments create color, eliminating the need for paint.</p>	<p>durable low maintenance</p>	<p>plastic products mixed with wood are not recyclable and will end up in a landfill at end of life</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 current least toxic 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. Consider a pin foundation to help reduce cement use in foundation work. 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](http://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. When designing your fence, consider what will happen with the materials at the end of life. Treated lumber cannot be recycled and leaches chemicals into the soil throughout its life.

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.

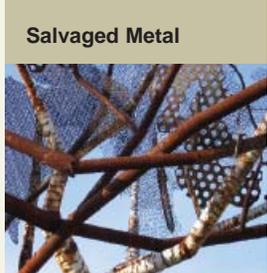
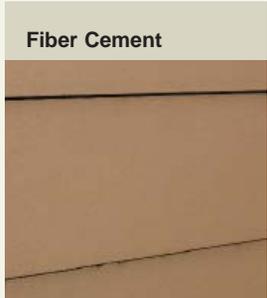
*When using wood in the landscape, look for wood certified by the Forest Stewardship Council (FSC). FSC certification ensures the wood is responsibly grown and harvested. Go to [www.fsc.org](http://www.fsc.org) to learn more.*



*Photo lower left: 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
<b>Wood</b> 	<p>See the decking choices on page 10 for description and tips on wood.</p>	See decks, page 10	See decking
<b>Recycled Plastic Lumber</b> 	<p>See the decking choices 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>	See decks, page 10	may not be structurally sufficient for some applications
<b>Salvaged Metal</b> 	<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 Resources on page 19.</p>	reused, reusable and recyclable	<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>
<b>Fiber Cement</b> 	<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>



*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. Visit [www.seattle.gov/util](http://www.seattle.gov/util)  
(click Yard, then Natural Lawn &  
Garden Care).*

## rockeries and raised beds

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.

Rockeries over 48 inches high typically must be permitted to ensure their safety. Check with your city and county Planning and Development departments for more information.

Raised beds use 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 and raised bed choices

MATERIAL	DESCRIPTION/TIPS	BENEFITS	DRAWBACKS
<p><b>Broken Concrete</b></p> 	<p>Described in patio, walkway and path choices on pages 7 and 8, broken concrete is a common material often available free if you pick it up, or you can have it 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>	<p>durable</p> <p>reusable</p> <p>recycled content</p>	<p>wide pieces take up a lot of gardening space in raised beds</p>
<p><b>Wood Timbers</b></p> 	<p>The most common landscape timbers are pressure treated (injected with rot- and insect-inhibiting chemicals under pressure). For years, treatment with chromium copper arsenate was standard. See the decking choices on page 10 for a description of the hazards of this type of wood treatments. 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>	<p>natural material</p> <p>local sources available</p>	<p>even rot-resistant species eventually rot</p> <p>can harbor carpenter ants and termites</p>
<p><b>Recycled Plastic</b></p> 	<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>	<p>durable</p> <p>recycled content</p>	<p>large dimensions can be difficult to cut</p>
<p><b>Salvaged Stone</b></p> 	<p>See patio, walkway and path choices on pages 7 and 8 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 Resources on page 19.</p>	<p>natural material</p> <p>reused</p>	<p>can be difficult to find quantities of one kind for a large job</p>



## found objects

The preceding material selection tables outline many reused items to incorporate into your landscape, but many others exist as well. Salvaged 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. See [www.craigslist.com](http://www.craigslist.com) for a great selection of garden art. Local classifieds also provide fruitful sources for salvaged materials.

When using salvaged materials, beware of lead-based paints, toxic wood preservatives, and other hazards. Ask questions of the person giving away or selling the material. If there is any 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 and path choices on pages 7 and 8, 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 and path choices on pages 7 and 8, these materials are plentiful, thanks to continual building and landscape renovations. Stone and brick are available at used building materials stores and salvage companies.
- 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.





# sheds and greenhouses

Comprised of many elements, garden sheds form 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 on [www.craigslist.com](http://www.craigslist.com) or in 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 limitations are 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 codes for setbacks from neighboring properties. In general, structures with roof areas smaller than 120 square feet do not require a permit. If you have questions about a structure you're considering for your backyard, call your local city or county Planning and Development departments.

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

*If you are purchasing new wood  
and/or plywood for your project,  
consider Forest Stewardship  
Council (FSC) certified wood.*





# 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 to 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. Systems should be inspected annually by the water provider. 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](http://www.irrigation.org) or the Washington Association of Landscape Professionals at [www.walp.org](http://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 economic, environmental, and personal priorities and consider landscape designs and plant choices that eliminate the need for an automatic, in-ground irrigation system.

If you have an existing permanent irrigation system, water efficiency incentives may be available from your public utility. For information related to new irrigation systems visit the Irrigation Association at [www.irrigation.org](http://www.irrigation.org) and go to *Search* and then *Consumer Info*.

## Permanent In-Ground Irrigation Systems

**Pipe Materials.** In-ground irrigation systems commonly rely on pipe made from polyvinyl chloride (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](http://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. Many soaker hoses are made from recycled plastic. See [www.savingwater.org/docs/successwithsoakerhoses.pdf](http://www.savingwater.org/docs/successwithsoakerhoses.pdf) for tips on efficient use.

## 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.



# 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 with in 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 material 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 is plastic, especially polyvinyl chloride (PVC). There are human and environmental effects from the production and disposal of PVCs. Moreover, recycling opportunities for PVC consumer products are essentially nonexistent at this time. PVC-free alternatives exist, including a wide variety of outdoor furniture with recycled content. These make use of materials otherwise destined for the landfill. California's Integrated Waste Management Board maintains a Recycled Content Product Database, which includes a section on outdoor furniture; go to [www.ciwmb.ca.gov/RCP/](http://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 decks on page 10. For a list of planters and pots with recycled content, go to [www.ciwmb.ca.gov/RCP/](http://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, disturbing 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. Motion detectors light only when an object trips an infrared beam, and turn off a short time later when no other motion is detected. Motion detectors add safety while minimizing the use of energy. The International Dark Sky Association maintains a simple sheet at [www.darksky.org/infoshts/pdf/is186.pdf](http://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.

Use solar lighting to avoid increased energy costs related to outdoor lighting, as well as the expense of hardwiring conventional outdoor lights. 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

## Books

- *Building with Vision: Optimizing and Finding Alternatives to Wood* by Dan Imhoff, et al. (Watershed Media, 2001). This book gives a good overview of the environmental and health impacts of building materials, and lists environmentally friendly alternatives.
- *Ann Lovejoy's Organic Garden Design School: A Guide for Creating Your Own Beautiful, Easy-Care Garden (A Rodale Organic Gardening Book)* by Ann Lovejoy (Rodale Inc., 2001). Using the same principles she teaches, helps readers to design successful gardens.
- *Green Remodeling: Changing the World One Room at a Time* by David R. Johnston, Kim Master (New Society Publishers, 2004) paperback.
- *Healthy House Building for the New Millenium* by John Bower (Health House Institute, 1999). Covers all aspects of building a healthy house, with a small section on salvaged materials.
- *Natural Remodeling for the Not So Green House: Bringing Your Home into Harmony with Nature* by Carol Venolia and Kelly Lerner (Lark Books, 2005).
- *No-Regrets Remodeling* by Alex Wilson et al. (Home Energy Magazine, 1997). Excellent overview of green remodeling, with emphasis on energy, efficiency, and health.
- *The New Natural House Book* by David Pearson (Fireside Publishers, 1998)

## Websites

- Find other remodel guides in the Green Home Remodel series (including Kitchen, Bath and Laundry, Painting, Hiring a Pro, Salvage and Reuse, and Roofing), at [www.ecy.wa.gov/programs/swfa/greenbuilding](http://www.ecy.wa.gov/programs/swfa/greenbuilding) and click on *Green Home Remodel*.
- Download the *Natural Lawn & Garden* guides and/or companion *Plant Lists*, or order printed copies by going to [www.seattle.gov/util](http://www.seattle.gov/util) and clicking on *Yard*.
- Looking for salvaged landscaping materials? Check out [www.craigslist.com](http://www.craigslist.com) and [www.2good2toss.com](http://www.2good2toss.com).
- Washington State University Master Gardener Program at <http://mastergardener.wsu.edu/mgoc/mgoc.html>.



*The Washington State Department of Ecology wishes to thank the Seattle Department of Planning and Development City Green Building Program for allowing us to adapt the original brochure to suit our needs.*





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[www.ecy.wa.gov/programs/snfa/greenbuilding](http://www.ecy.wa.gov/programs/snfa/greenbuilding)



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Eastern Regional Office: (509) 329-3448  
Central Regional Office: (509) 575-2782  
Southwest Regional Office: (360) 407-6084  
Northwest Regional Office: (425) 649-7224  
HQ Material Resources: (360) 407-6693



*If you need this information in an alternate format, please call the Solid Waste and Financial Assistance Program at 360-407-6900. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.*



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