EnviroHouse
CITY OF TACOMA

creating a sustainable landscape

Landscaping has a tremendous impact on the natural resources a building uses. Making sustainable choices about the way a house is planned, sited, landscaped and maintained can:

- **Make a healthier home** by reducing the amount of pesticides, fertilizers and other chemicals present in landscape materials and applied through maintenance practices. Sustainable landscaping choices can also promote good air quality through the presence of plants.
- **Reduce natural resource use and utility bills** by decreasing energy use within your home, reducing the amount of water used outside the home, and reducing the amount of material going to landfills.
- **Reduce maintenance and maintenance costs**, and help grow healthier plants.
- **Reduce your ecological impact** by using materials that are easier on the environment, restoring natural ecological functions on your site, and reducing the impact that your house has on the surrounding community. You can reduce the amount of rainwater runoff; protect water quality and living things in area streams, lakes and Puget Sound; provide habitat for animals; and even create an area that absorbs more carbon dioxide—one of the gasses implicated in global climate change.
- **Create a beautiful, relaxing yard.**

At the EnviroHouse, see and learn landscaping techniques that provide all of these benefits. The landscape at the EnviroHouse was designed to:

- **Be water-wise** through planning, plant choices, planting methods and maintenance techniques.
- **Use native and adapted plants** to provide habitat, increase biodiversity, promote healthy plants, decrease water use and reduce erosion.
- **Use recycled and salvaged materials** for paths, decks, fences and landscaping materials.
- **Manage rainwater** on site and improve the quality of water leaving the site and roads around the landfill.
- **Provide ideas for natural yard maintenance.**
- **Inspire your own landscape choices!**

contents

plan a sustainable landscape

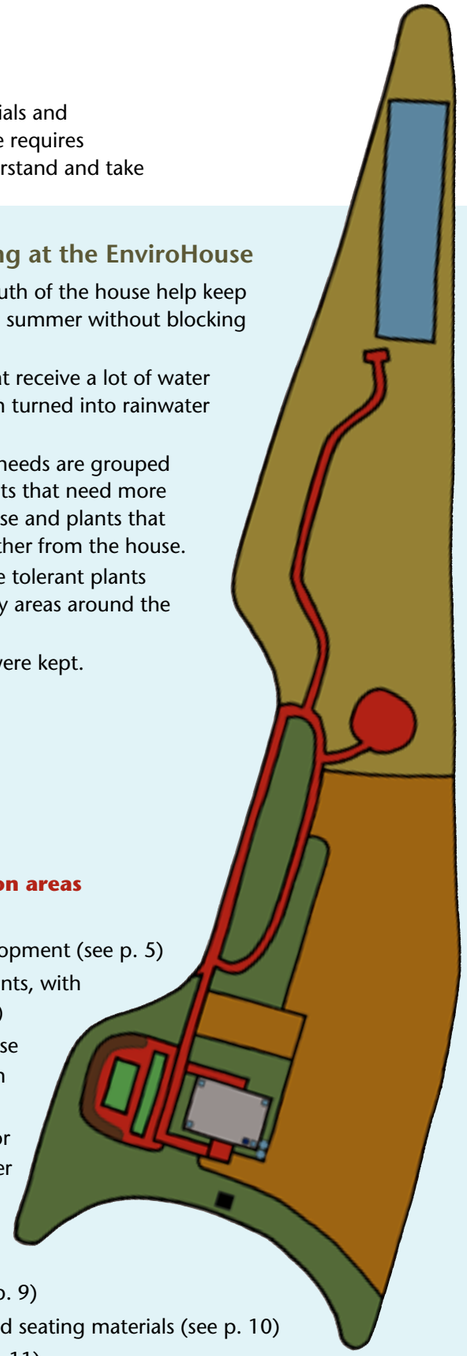
A well-planned and -designed landscape can help save water, energy, materials and money—outdoors and indoors. However, creating this sustainable landscape requires stepping back and investing some time in planning. This allows you to understand and take advantage of opportunities and constraints that are part of your site. Planning also helps you consider your objectives, priorities and the long- and short-term costs (financial, environmental and social) of the choices you make. Finally, site planning helps to create a landscape where plants will thrive with minimal care.

Ways to plan your sustainable landscape

- **Get to know your site.** Assess existing soil, vegetation and topography. Identify sunny, shady, hot, windy or exposed areas; the direction of prevailing winds in winter; wet/poorly drained and dry areas; and slopes that could erode or be difficult to mow. Check to see whether plants are planted in appropriate areas or need to be moved.
- **Decide what you want.** Determine your environmental goals, construction and maintenance budgets, desired uses and aesthetic preferences. Think about how plants can help you create play areas, shade, privacy, entertainment areas, colorful areas, wildlife habitat and food.
- **Develop a plan to fit your site and your needs.** Trees, shrubs and fences can manage temperature and energy in your home by blocking wind in the winter. Deciduous trees can block sun in the summer and allow sun to warm your home and provide light in the winter. Use plants that will thrive with little supplemental water and maintenance in each situation, be it sunny, shady, wet or dry. Group these plants by their needs and create hydrozones, or areas that contain plants with similar water needs. Try to keep existing plants, especially trees and shrubs.

Landscape planning at the EnviroHouse

- Deciduous trees south of the house help keep the house cooler in summer without blocking the sun in winter.
- Low-lying areas that receive a lot of water drainage have been turned into rainwater infiltration areas.
- Plants with similar needs are grouped together, with plants that need more water near the house and plants that need less water farther from the house.
- Moisture and shade tolerant plants are located in shady areas around the house.
- Pre-existing trees were kept.



Key to demonstration areas

- EnviroHouse
- Low impact development (see p. 5)
- Low water use plants, with mulch (see p. 6-8)
- Moderate water use plants, with mulch (see p. 6-8)
- Weather station for irrigation controller (see p. 7)
- Water meters (see p. 7)
- Composters (see p. 9)
- Pathway, deck, and seating materials (see p. 10)
- Lawn areas (see p. 11)
- TAGRO garden (see p. 6 & 8)

protect and restore water resources

A natural system such as a forest makes use of most of the rainfall it receives, so very little rainfall runs off the ground. However, in developed areas, water flows quickly off of impervious surfaces (such as roofs, roads, sidewalks and compacted soil) and into streams, lakes and Puget Sound, which can damage water bodies and habitats. This runoff carries pollutants such as sediment, oils, heavy metals, pesticides and fertilizers that, in high concentrations, can harm animals and other organisms.

Low impact development minimizes these problems by managing runoff as close to its origin as possible—on a site or a small group of sites—and restoring or maintaining natural hydrologic functions (water movement on and through the earth).

Ways to go green

- **Reduce the size** of a new building, patio or even the size of your lawn to minimize surfaces that are completely or mostly impervious.
- **Use permeable surfaces** such as pervious pavers, wood chips, gravel and gardens planted on healthy soil.
- **Create an on-site rainwater infiltration area**, such as a rain garden or a bioretention cell. Bioretention cells are shallow, landscaped areas composed of soil and plants that have been selected to help store, clean and infiltrate rainwater.
- **Keep existing plants**, especially native ones. Restore sites by planting new plants and preserve well-draining native soil.
- **Collect rainwater** in a rain barrel to use in your garden during dry months or to use for other household water needs that don't require potable (drinkable) water.

The EnviroHouse rain garden cleans water from the access road at the landfill, as well as water from the EnviroHouse site.

Low Impact Development at the EnviroHouse

- Rain garden cleans water from the access road at the landfill, as well as water from the EnviroHouse site.
- Three different kinds of permeable pathway pavers: rubber pavers made from recycled tires, salvaged clay brick and crushed quarry rock. These allow rainwater to soak into the ground.
- Rain barrels positioned at the bottom of downspouts capture rainwater from the roof for later use in the garden.
- Low impact development foundation system minimizes land disturbance during construction and provides a drainage course for rainwater runoff.

place the right plant in the right place

Growing the right plants in the right places allows them to thrive with minimal care. Choosing plants that are well adapted to the conditions you find in different areas of your garden leads to healthier, more beautiful plants; reduces maintenance; helps prevent pests and diseases; reduces water use; and saves you time and money. Planting right for your site can also make your garden a better place for birds, butterflies and other wildlife.

Ways to go green

- **Select plants that are native to the Northwest** or are adapted to our climate but are not invasive species or noxious weeds. These plants will be well suited to our environment, so they require less maintenance and less supplemental water. You usually need to water native and adapted plants for only two to three years (until they are established).
- **Choose plants that are low water use** or drought tolerant.
- **Select plants that fit the sun, soil and water** available in your yard. Take note of microclimates and match plants to different ones. For example, you might have a shady, damp area to the north of your house or a hot, dry, sunny area with a lot of southern exposure.
- **Use many different species of plants**, increasing your yard's biodiversity. This will help your yard resist pests and diseases. It also helps create habitat for birds, animals and insects that people like to watch, including birds and insects that eat pests.
- **To reduce maintenance**, consider a plant's mature size and form before you plant it. Also, look for plants that will complement each other, rather than compete, while growing and when mature.
- **Group plants** with similar needs for sun, soil and water. This will help plants thrive and help you take care of different plants according to their needs.
- **Create a vegetable garden** to grow your own food. This reduces the distance food travels to get to your plate and reduces the gas used and carbon dioxide created by transportation. Vegetables prefer sunny, well drained sites with plenty of water.

Group plants according to their water needs, such as these drought-tolerant varieties at the EnviroHouse.

Plantings at the EnviroHouse

- Many species of native and adapted plants.
- Many species of drought-tolerant and low water use plants.
- Plants are grouped by their water needs.
- TAGRO vegetable garden.

water wisely

Some experts estimate that more than 50 percent of irrigation water is wasted due to evaporation, wind, improper system design or overwatering. The types of plants you choose, where and how you plant them, and how you water can all have a large impact on outdoor water use.

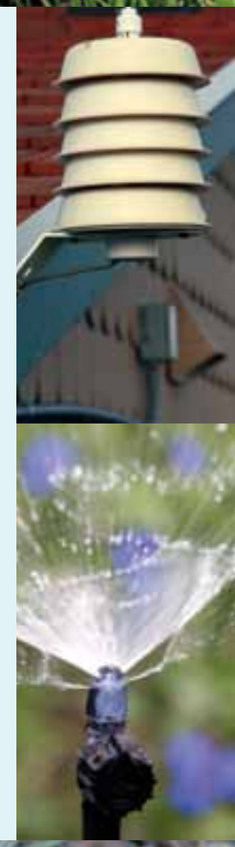
Ways to go green

- **"Hydrozone" your landscape** by grouping plants with similar water needs. This helps you give each group of plants only the amount of water they need and no more. For example, you can group high-water-use plants together in a hydrozone near the house. Low-water-use and very low-water-use plants can be grouped together in one or two additional zones. Grass should be placed in its own zone for separate watering.
- **Use an efficient watering system**. If automatic irrigation systems are well designed and maintained, they can greatly reduce water waste and help plants thrive.
  - **Drip/micro-irrigation is good for trees**, shrubs, planting beds and vegetable gardens. Micro-irrigation is one of the most efficient forms of irrigation, as it minimizes water loss to evaporation and runoff. Types of micro-irrigation emitters include drip emitters, micro-sprays and bubblers. Soaker hoses are an efficient way to water manually.
  - **Lawns can be watered more efficiently** with rotating or oscillating lawn sprinklers or a well-designed, installed and maintained automatic underground sprinkler system. Choose sprinklers with spray patterns that match your lawn, or adjust the spray pattern for automatic sprinkler heads so that only areas that should be watered are watered. Also, use sprinklers that apply water slowly enough for the soil to absorb it without running off.
- **Give plants the right amount of water**. Water deeply but infrequently, and water early in the morning or late at night to avoid evaporation. Also, adjust your watering schedule throughout the spring and summer as plant water use varies. New weather-based automatic irrigation system controllers can make these adjustments for you.

Drip emitters minimize water loss to evaporation and runoff.

Watering wisely at the EnviroHouse

- Hydrozoned landscape with highest water use plants close to house and very low water use plants farthest from house.
- Automatic sprinkler system with a weather-based controller, a Weathermatic SmartLine with an on-site weather station, conserves water by adjusting watering times based on actual weather and site information.
- Lawn watered with MP rotator sprinkler heads, which reduce runoff and spray drift with wind.
- Drip/micro-irrigation system for trees and planting beds.



build and maintain healthy soil

Healthy soil is the foundation of your landscape. Healthy soil grows more beautiful, healthier plants; reduces the need to water; reduces surface and groundwater pollution; and even reduces the amount of work you have to do.

All of this is possible because soil is not just a mix of sand, clay and organic matter. Air and water, which transport food to and waste away from plants, make up half the volume of healthy soil. The decomposing organic matter (such as compost or TAGRO Mix) in soil provides food for the billions of organisms found in soil. This living soil in turn stores water, natural nutrients and fertilizers, supplying balanced nutrients to plants as they need them. Plants keep soil healthy by conditioning it and providing food for organisms. Soil keeps plants—and the larger environment—healthy by providing and storing food, breaking down pesticide residues and reducing runoff.

Ways to go green

- **Amend the soil** throughout an entire planting bed—not just small planting holes—with TAGRO Mix, compost or other organic material before you plant.
- **Mulch plants** with woody mulch, compost, leaves or grass clippings. Mulching, or placing organic materials on the surface of soil, reduces evaporation, limits soil runoff, reduces weeds and reduces soil temperature changes.
- **Feed plants** using only natural organic and slow-release fertilizers. These give plants nutrients when they need them. "Quick release" fertilizers wash through and off soil, polluting surface and ground water.
- **Don't damage your soil** by overfertilizing or overwatering. Think twice before using pesticides that could damage soil life. If you do use a pesticide, use a less-toxic solution such as traps or barriers, repellants, soaps, horticultural oils, plant-based pesticides or a pesticide that targets the specific problem.

Building healthy soil at the EnviroHouse

- Soil amended by tilling TAGRO Mix down 8-10 inches into the existing soil before planting.
- TAGRO vegetable garden grows healthy, strong plants with TAGRO Potting Soil, which is a nutrient-rich soil that requires no additional fertilizer.

TAGRO Mix is great for an existing lawn revitalizer and a booster for new plant installations.

compost

Yard trimmings and food scraps can be valuable resources for your landscape. When you throw them in the trash they get sealed away in landfills, where they make up 40 percent of municipal solid waste. When yard and food wastes are sealed away in landfills, they decompose without oxygen (anaerobic decomposition) and create methane, a greenhouse gas that causes global warming, and acidic liquids that can harm groundwater if they escape a landfill.

By composting, you turn yard trimmings and food scraps into a valuable resource that can feed your lawn and garden, reduce or eliminate the need to apply other fertilizers, and reduce your waste (and garbage fees). There are ways to compost for everyone, depending on the type of waste and where you live.

Ways to go green

- **Figure out what types of waste you want to compost** (yard trimmings, food waste or even pet waste), whether you want to have a finished compost product to use on plants, and which type of composting is right for you. Systems include:
  - **Build a compost pile or bin** for yard and food waste. Using a bin and turning the pile to aerate it leads to better and faster decomposition. You can also buy enclosed and rollable bins that look neater and speed up the compost process.
  - **Use a worm bin** for food scraps and small amounts of yard waste. Red earthworms will do the work of composting and create rich products called castings that are excellent for fertilizing indoor and outdoor plants.
  - **Use a solar digester** for food scraps if you do not want a finished compost product. These "digest" food waste, which substantially reduces the amount of waste, but don't produce a compost product. Since these "hot piles" are very good at killing pathogens, they can handle meat and pet waste.

Composting at the EnviroHouse

- An indoor worm bin and yard waste composters in action.
- Examples of traditional compost bins (including rolling, stacking and multi-compartment bins), worm bins and solar digesters. We even have three systems that can compost pet waste.

A variety of composting systems exist for food, yard and pet waste.

select sustainable pathway, patio, deck and seating materials

Create inviting outdoor spaces and reduce your environmental impact through the materials you choose for pathways, patios, decks and seating. A variety of materials are available that are salvaged, made from recycled materials and/or are "permeable."

Ways to go green

Permeable pathways and patios are designed to let water seep through gaps between materials and infiltrate into the ground. This helps keep soil alive and healthy, as well as helping manage rainwater on site. Because water will be seeping into the ground beneath paving stones, the structure below the pavers must be prepared for infiltration.

- **Permeable materials include:**
  - **Permeable concrete pavers**
  - **Crushed quarry rock** from inland quarries, which are generally less damaging to the environment than gravel mines and use nearly 100 percent of the stone from each quarry (more material is wasted in gravel mines)
  - **Organic materials** such as woodchips or nutshells
  - **Broken concrete, salvaged clay bricks, stones, recycled glass pavers**, and other paving stones can be installed with unmortared gaps between pavers that allow rainwater to seep into the ground
- **Recycled-content or salvaged materials include:**
  - **Rubber pavers** made from recycled tires, which are also permeable
  - **Salvaged materials** such as clay bricks, concrete and stone
  - **Recycled glass** that has been tumbled to look and feel like beach glass
  - **Recycled glass pavers**
  - **Poured concrete with fly ash**
  - **Recycled plastic and composite lumber** that can be used for decks and seating

Pathways, decks and seating at the EnviroHouse

- Pathways made of rubber pavers from recycled tires, crushed quarry rock and salvaged clay brick.
- Deck, bridge and raised garden beds made from recycled plastic lumber.
- Aluminum in park benches contains 95 percent recycled content and wood is from forests managed for long-term sustainability.

The bench at the EnviroHouse contains recycled aluminum, and wood from a sustainably-managed forest.

reduce the impact of your lawn

Grass is one of the highest water and chemical users in a yard. A typical suburban lawn in the United States uses about 10,000 gallons of irrigation water a year and homeowners use 10 times more pesticides per acre than farmers. In addition, when winter rains come, lawns can absorb only 1/10th the water that a forest can, so most rainwater becomes runoff. Reducing the area of your yard covered by a lawn is one of the most important steps you can take to conserve water and keep humans, other living things, and water and soil healthy.

Ways to go green

- **Try shrinking your lawn** by 25 percent and replace that lawn with native or low-water plants or with a vegetable garden.
- **Steep slopes, shady areas** and land near streams or lakes are not well suited to grass. Try growing plants more suited to these areas, such as certain native plants or alternative groundcovers such as kinnikinnick, wild ginger, beach strawberry or low Oregon grape. Grass does best in areas that are well-drained, receive several hours of direct sunlight per day and have soil at least 6 inches deep.
- **Use a variety of grass** that is better suited to our climate and requires less irrigation during summer. Look for cool season grasses that grow well during winter.
- **Practice natural lawn care:**
  - **Mow your grass higher** (1 ½ to 2 ½ inches high) and leave the clippings on the lawn.
  - **Fertilize moderately** with compost or a "slow release" or "natural organic" fertilizer. September is the best time since that is when grass builds root reserves.
  - **Water deeply but less frequently.** This promotes root growth, which makes the grass more drought tolerant.
  - **Improve lawns** in poor shape by aerating and overseeding.
  - **Use less toxic weed and pest control** instead of "weed and feed" products.

Lawns at the EnviroHouse

- Three varieties of low-water-use grasses: Eco-lawn mix, which contains a variety of drought-tolerant grasses and flower seeds; rye grass; and native grasses.
- Dreamturf, a synthetic turf that looks natural, needs no watering, is virtually maintenance free and is green year round.

A mulch mower leaves clippings on the lawn for added moisture and fertilizer.

resources

Irrigation, water-wise gardening:
Tacoma Water - Water Conservation Office, (253) 502-8723, www.tacomawater.com

Native plants:
WSU Extension Master Gardeners, (253) 798-7170, http://gardening.wsu.edu

Low Impact Development and protecting water quality:
City of Tacoma Surface Water Management, (253) 591-5588, www.cityoftacoma.org/surfacewater

Rain gardens:
Pierce County Low Impact Development, www.pierce.wsu.edu/Water_Quality/LID/index.htm

Composting:
City of Tacoma Solid Waste Management, (253) 591-5543, www.cityoftacoma.org/composting

TAGRO:
City of Tacoma TAGRO, (253) 502-2150, www.tagro.com

Natural yard care:
Tacoma-Pierce County Health Department, (253) 798-4587, www.tpchd.org/naturalyardcare

EnviroHouse
CITY OF TACOMA

Wednesday – Friday: 10 a.m. – 3 p.m.
Saturday – Sunday: 11 a.m. – 5 p.m.
City of Tacoma Landfill, 3510 S. Mullen St.
Tacoma, WA 98409
www.cityoftacoma.org/EnviroHouse
(253) 573-2426

About the EnviroHouse

The City of Tacoma EnviroHouse is a permanent model home showcasing green building and natural landscape ideas, materials and techniques to create a healthy home and planet.

The EnviroHouse champions the benefits of sustainable living and building practices to homeowners, the building industry and the general public, highlighting readily available products for new and existing homes and yards.

Tacoma

TACOMA WATER
TACOMA PUBLIC UTILITIES

Solid Waste Management
Surface Water Management
Wastewater Management

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