Queens Botanical Garden

Green Trail

Protecting and nourish our environment and our community—by making sustainable choices—is one of the most important missions at Queens Botanical Garden.

The Green Trail is a series of signs throughout the Garden and inside the Visitor & Administration Center that describe how we practice environmental stewardship—from our design and construction to our gardening practices and other day-to-day operations—and how you can practice sustainability at home.

The Green Trail itself is a example of sustainable design—the signs and stands were made with recycled materials using environmentally sound fabrication processes.

We're going green—you can too!

Green Trail
throughout the Garden

1 These Pavers Soak Up Water!

The pavers in this area and in our parking stalls are permeable. They allow rainwater to seep into the ground. Can you see how the water gets through?

In a natural landscape, plants, fallen leaves, and soil absorb rainfall. But most sidewalks and parking lots are made of impermeable materials. As a result, storm water runs off into sewers, carrying pollution to nearby waterways. A typical city block generates nine times more runoff than a woodland area of the same size.

How many sidewalks and driveways can you find at home or in your neighborhood that could be replaced by permeable pavers?

2 A Green Place to Park

Look around at our Parking Garden. How is it different from the typical parking lot?

Our Parking Garden is not a sea of asphalt! It is full of pretty plants. The planted areas absorb rainfall and prevent polluted storm water from entering nearby waterways. Some pavers in this garden are permeable — they allow rainwater to seep into the ground. And unlike asphalt, our Parking Garden helps keep the city cool.

Imagine a parking garden at home or in your neighborhood. Beautiful planted areas could catch storm water running off the pavement. Permeable pavers could replace the asphalt or concrete.

3 Slow the Flow!

This area, called a Bioswale, is a gently sloped, bowl-like depression in the landscape that has been created to catch storm water.

The Bioswale's special soil and plants that tolerate both wet and dry conditions absorb the rainfall quickly, like a sponge. The Bioswale keeps storm water out of the city's sewer system, which often overflows. This keeps polluted water out of our rivers, bays, and ocean. Visit after a rainstorm to see the Bioswale hard at work!

You can trap storm water flowing down pavement and gutters by creating small planted depressions, called rain gardens, in your yard.

4 Nature Express

The same natural recycling that happens every day in nature is also at work in a compost pile. This process, called decomposition, can take years in nature. But when we compost, we give fungi, bacteria, and other decomposers everything they need to recycle much faster.

Nature's recyclers need air, warmth, and moisture. They also need a balanced diet of brown foods, like leaves, and green foods, like vegetable scraps.

Do you see a compost bin that would fit in your yard? Don't worry if you don't have a yard, because you can compost with an indoor worm bin.

5 Flushing Meadows the Way It Used to Be

Nearby Flushing Meadows Corona Park got its name because this area of Queens was once a vast meadow of grasses and colorful wildflowers that swayed back and forth in the wind.

In our Meadow we are working to restore a piece of this native plant community. The wildflowers and grasses provide places for birds, butterflies, and other animals to feed, nest, and rest. Walk through the meadow. How many different kinds of wildlife can you find?

You can create a small meadow garden at home. Unlike lawn, it will not need frequent mowing. But it will attract butterflies and other pollinators for you to enjoy.

6 Water, Water Everywhere

But only drops to drink!

So much of the Earth is covered with water that it has been called the "water planet." So why are water shortages such a big problem?

About 97 percent of the planet's water is saltwater in the oceans. Only about 3 percent is fresh water, and most of this is tied up in mountain glaciers and the polar icecaps. A mere .003 percent of the Earth's water is available for drinking. That is why saving water is so important!

Think of all the ways you can save water both in the house and in the garden.

Note: You can follow the Green Trail in any order; the signs are numbered in this guide just to show their locations in the Garden.

7 Cool Pavers, Cool City

Touch the pavers to the right. How do they feel? Did you ever touch a dark surface that has been sitting in the sun? It is hot, because dark colors absorb heat. The light-colored pavers stay cool because they reflect sunlight.

Dark pavement and roofs make cities much warmer than the countryside. Reducing this "urban heat island" effect lowers air-conditioning bills, saves energy, and prevents air pollution.

You can help keep the city cool! Plant trees for shade. Use light-colored pavement. And next time your roof needs to be replaced, install a light-colored or green roof instead.

8 It's Safe to Stop and Smell the Roses!

Enjoy these roses' sweet perfume when they are in bloom. We grow them naturally, without chemical pesticides and fertilizers. This is healthier for you and for us, and also for the bees that live in the nearby Bee Garden and visit the roses to gather pollen and drink nectar.

We try to grow all our plants organically. You can, too! Feed them with organic, not synthetic, fertilizers. Control diseases and pests simply by pruning off affected leaves. And when you buy roses and other plants, look for disease-resistant varieties.

9 Green Lawns

Most ordinary turf lawns require lots of water and fertilizer to keep them green and beautiful. Our eco-lawn of tall turf-type fescue grass is an easy, low-maintenance alternative that is both good for the environment and less work for you!

Tall turf-type fescues grow very slowly, so they require less frequent mowing—which reduces energy usage and air pollution. They don't require fertilizing, beyond the natural nutrients they get if you simply leave the grass clippings on the lawn as a mulch. Fescue grasses also require less water—they can thrive on rainfall alone, and only need watering if it doesn't rain for several weeks.

10 Nature's Recyclers

Woodlands are nature's champion recyclers. All the leaves and branches that fall in a forest are recycled in a process called decomposition.

Look around our Woodland Garden. We do not remove the leaves. Instead, we let nature's recyclers go to work. You can do the same in your garden!

Mushrooms, microscopic bacteria, and worms are some of nature's star recyclers. When they eat fallen leaves and branches, the nutrients end up back in the soil. This helps the living plants grow.

Uncover some leaves or turn over a log to see how many recyclers you can find.

11 A Protective Blanket for Plants

Nature never leaves the ground uncovered. Fallen leaves provide a protective blanket around the plants. Like nature, we cover the soil between our plants with a protective mulch of shredded leaves, wood chips, and other natural materials. What mulch do you see here in this garden?

Natural mulches like leaves and wood chips are best for plants. Like slow-release plant food, they help enrich the soil.

Mulching slows the growth of weeds. It saves water by reducing the need for irrigation. It can eliminate hours of work in your garden!

12 Have You Thanked a Tree Today?

Look at the trees along the Oak Allée. Can you imagine a world without trees? There would be no shady benches on a hot day. No colorful leaves in fall. No places for birds to nest and rest.

Trees beautify our neighborhoods. They keep the city cool, and the air we breathe healthy. They help prevent global warming by absorbing carbon dioxide, the major "greenhouse gas." And trees help keep our beaches clean — just one tree can capture 1,525 gallons of polluted storm water every year! Plant a tree for your family, your neighbors, and the Earth.

13 Wood With a Past

The boards in the bridge you are about to walk on are made of reclaimed wood mixed with recycled plastic. They could contain plastic bags you took home from the dry cleaners or grocery store and recycled.

Using lumber made with recycled bags and bottles conserves resources and keeps waste out of landfills. It keeps trees from being cut down. And unlike "real" wood, it doesn't rot or need to be painted!

Next time you build a deck, or raised beds or planters for your garden, use lumber that contains recycled plastic. Look for products with the highest percentage of recycled material.

14 Earth Energy

This metal cap covers our geothermal well. We do not burn any fossil fuels at the Garden to heat or cool the Visitor & Administration Center, which has reduced the Garden's overall use of fossil fuels significantly. Instead, our geothermal system uses energy that comes from the heat stored in the earth. Our geothermal system uses 75 percent less energy than regular heating and air conditioning, saving about as much energy as it takes to light the Statue of Liberty!

Did you know that buildings use 40 percent of the energy we consume? More than half of this energy is used for heating and air conditioning—and most of it comes from natural gas, oil, and other polluting fossil fuels. Can you think of ways to save energy at home?

15 People At Work Below!

The garden you are walking on is our Green Roof. While you are admiring the flowers, you may be walking above people who are meeting in the auditorium below.

Because the soil on the Green Roof is only about six inches deep, no trees can live here. But the Green Roof still provides food for birds, butterflies, and other animals. It absorbs storm water. It also keeps the building cool in summer and warm in winter. Discover more about our Green Roof on the sign at the top.

If you had a green roof, what would you grow? Vegetables? Flowers?

16 Plant Families At Work

Members of the Rose family, Lily family, Aster family, and many others grow together in this garden. All are native to the city and provide places for butterflies and other wildlife to feed and rest. They also help absorb rainfall and prevent flooding.

How many families can you find? Like people, plants in the same family often look alike. Usually, it is their flowers that have a family resemblance. For example, many asters have daisy-like flowers with petals around a central "disk."

Did you know scientists have discovered that plants can recognize members of their immediate family?

17 Is It Concrete or Is It Wood?

Take a close look at this wall. It is made of concrete, but it looks like wood. Why?

To make the wall, wet concrete was poured between boards made of native eastern hemlock. The notches and beautiful long markings of the hemlock were pressed into the concrete. When it dried, the boards were removed. Each tree species has distinctive markings, called grain. That means if wood from another tree had been used, the wall might look much different.

No trees were killed to make this wall! The hemlock boards had been used before and were salvaged.

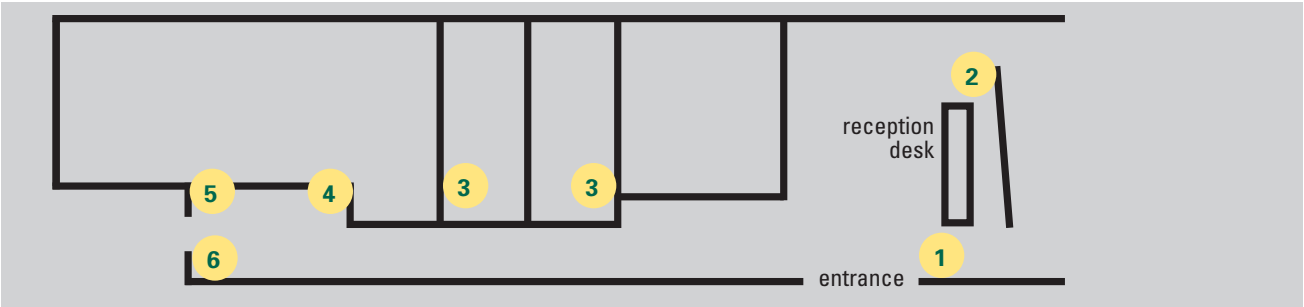
18 Good Wood

Look around at the wood used in our Visitor & Administration Center. The western red cedar siding on the building's exterior walls is certified by the Forest Stewardship Council (FSC).

In forests around the world, logging still destroys wildlife habitat. It pollutes water and can harm the health and livelihoods of the local people. The FSC is an independent group that sets standards for the timber industry. FSC-certified wood comes from forests managed to protect the environment and the people who live and work in them.

You can search for FSC-certified wood products, such as lumber, paper, and furniture, at www.fscus.org.

Green Trail
inside the Visitor & Administration Center



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1 This Steel Had a Previous Life!

Much of the steel used in this building is recycled. The columns inside and outdoors may contain a can of soup you ate, your neighbor's old refrigerator, or your parents' last car.

Recycling conserves resources! Recycling one ton of steel saves 2,500 pounds of iron ore and 1,400 pounds of coal. And by recycling, the steel industry saves enough energy annually to power 18 million homes for a year!

Next time you eat a can of fruit or open a can of coffee, be sure to recycle the containers. You never know where they will turn up next.

2 What Do You Do With a Plant That Can Grow Four Feet a Day?

Use it as a renewable resource!

This wall is made of bamboo. Have you ever eaten bamboo shoots? Taken banslochan to treat a cold? Sat on a bamboo chair? If so, you have used bamboo, too.

For centuries, bamboo has been an important building material in Asia. In Chinese bamboo is known as zhu (竹), in Korean as dae (대) or daenamu (대나무), and in Hindi as baans or venoo.

You can help protect forests by buying products made from fast-growing bamboos instead of wood from slow-growing trees.

3 Water Conservation At Work!

We're saving water in these public restrooms. A sensor automatically turns the water on and off when you put your hands under a faucet and move them away. Instead of going to the city's overburdened sewer system, used water from the sinks is cleansed by the sand and plants outdoors in our Constructed Wetland, then piped back to flush the toilets. The urinals in the Men's Room use no water at all.

Altogether, we have reduced potable water use in our Visitor & Administration Center by 82 percent! How many ways can you think of to save water at home?

4 Breathe Easy!

The paints, glues, and other products used in this building are designed to keep the air healthy.

Most people spend 80 to 90 percent of their time indoors. Yet studies show that the air inside can be 25 to 62 percent more polluted than the air outside! Formaldehyde and other chemicals called volatile organic compounds, or VOCs, are one major cause of indoor air pollution. They are found in many common products, including paints, carpets, plywood, upholstery, pesticides, and household cleaners. They can cause asthma, allergies, and even cancer.

Buy no- or low-VOC products to keep your home and family healthy!

5 These Windows Save Energy!

The many windows in this building enable staff and visitors to enjoy beautiful garden views. But they work hard, too! They let daylight in, reducing the need for artificial lighting. Some can be opened for fresh air. Their glass has an invisible metallic layer called a low-E coating that keeps heat inside in winter and keeps out the sun's hot rays in summer.

Did you know that heat gain and loss through windows can account for 50 percent of the energy used to heat and cool a house? When you buy windows, look for energy-efficient models with the ENERGY STAR label.

6 Smart Lights

Most lighting systems waste energy. They provide light when it isn't needed. Or they provide more light than is necessary.

Our computer-controlled system automatically adjusts light levels based on how much natural light is available, or whether anyone is in the room. This efficient system and a building design that lets in daylight help us cut energy use by 40 percent!

As a nation, we use about 25 percent of our electricity for lighting. You can save energy at home by switching off lights when you don't need them and using compact fluorescent light bulbs.

This Green Trail sign is in the staff restroom on the second floor of the Visitor & Administration Center:

7 Why Waste Human Waste?

The toilet in this restroom looks ordinary, but it's not. It transforms human waste into compost!

A mild, biodegradable soap and water carry the waste to a composting tank below. There, bacteria, fungi, and earthworms turn it into compost, just as in a compost pile. The resulting compost looks and smells like topsoil.

The toilet uses only 3 to 6 ounces of recycled water for flushing. Compare this to the typical toilet, which uses 1.6 gallons! And no water or waste goes into the city's overburdened sewage system.

Green Trail glossary

Allé—a tree-lined avenue, often one that is part of a landscaped garden. French word for a planned walkway.

Banslochan—(Sanskrit) Eye of Bamboo. The liquid from the hollow center of the bamboo stem.

Bioswale—a gently sloped, bowl-like depression in the landscape that has been created to catch storm water. Its loosely layered soil and special plants absorb the rainfall quickly, like a sponge.

Compost—a dark, crumbly soil-like substance comprised of decomposed organic matter such as yard clippings, leaves, and food scraps.

Composting—the controlled process of recycling organic matter into compost.

Decomposition—the natural process of decay caused by bacterial or fungal action; decay: the organic phenomenon of rotting.

Disease-resistant—has a high tolerance to pathogens—germs or bacteria that cause infection or disease. Has developed certain adaptations that help deter disease organisms.

Eco-lawn—a mixture of grasses, flowers, and herbs that stands up well to mowing. A lawn that does not require additional inputs of water and nutrients in order to survive.

Fertilizers—supplemental nutrients for plants. Can be made from natural or chemical sources.

Forest Stewardship Council (FSC)—a non-profit organization devoted to encouraging the responsible management of the world's forests.

Fossil fuels—a hydrocarbon deposit, such as petroleum, coal, or natural gas, derived from living matter of a previous geologic time and used for fuel.

Geothermal well—(from the Greek roots geo, meaning earth, and thermos, meaning heat) power is extracted from heat stored in the earth or ground water by making use of heat exchange between materials of unequal temperature.

Grain—the pattern made in wood that is influenced by the kind of tree and its age.

Greenhouse gas—a gas, such as carbon dioxide or methane, which contributes to potential climate change by preventing heat energy emitted by earth to leave the atmosphere.

Impermeable—not allowing fluids or gases to pass or filter through.

Indoor worm bin—a plastic or wooden container used for indoor composting using a bedding of shredded paper, ground cardboard or peat moss, or a combination of these materials together with vegetable kitchen waste and red worms.

Irrigation—supplying dry land with water.

Low-E coating—a very thin metallic coating on glass or plastic windows that reduces heat loss through the window; the coating emits less radiant energy

Mulch—any material placed over the soil to control weeds and conserve soil moisture. Usually this is a coarse organic matter, such as leaves, clippings or bark.

Native plant—one that evolves, occurs naturally, or has existed for many years in an area. These can be trees, flowers, grasses or any other plants.

Nectar—a sweet liquid produced by plants that attracts pollinators.

Organic—refers to any substance that is or was alive at one time or is a by-product of a living organism. Foodstuff grown or raised without synthetic fertilizers or pesticides or hormones may be classified as organic.

Pavers—a molded rectangular block of clay baked by the sun or in a kiln until hard and used as paving material. Pavers are sometimes used instead of concrete to create a hard surface for an outdoor living space such as a terrace or patio.

Permeable—allowing fluids or gases to pass or filter through.

Pesticides—a chemical or other substance used to kill pests (as rodents or insects).

Pollen—a fine to coarse powder or grains containing the microgametophytes—the male reproductive cells—of seed plants.

Pollinator—an insect that carries pollen from one flower to another.

Potable water—water that is safe for drinking

Pruning—the act of trimming a plant, tree or shrub. Pruning is the process of removing certain elements from a plant; in landscaping this process usually involves removal of diseased, non-productive, or otherwise unwanted portions from a plant.

Renewable resource—a naturally occurring raw material or form of energy that can replenish itself relatively quickly through ecological cycles and sound management practices.

Runoff—rainfall not absorbed by soil that flows along the surface to the lowest available point.

Salvaged—property or building materials saved from damage or destruction and put to another use.

Synthetic—human-made: not of natural origin; prepared or made artificially.

Tolerate—to put up with; endure.

Urban heat island—a phenomenon that occurs in metropolitan areas/cities, that prevents cooling of the area after sundown leaving it warmer than surrounding rural areas. It is caused by radiation of heat energy stored in brick, cement, asphalt, and dark surfaces that accumulated during daylight hours or from the building's own internal heat if not properly insulated.

Volatile organic compounds (VOC)—compounds that evaporate easily at room temperature and often have a sharp smell. They can come from many products, such as office equipment, adhesives, carpeting, upholstery, paints, solvents, and cleaning products; often carcinogenic or cancer-causing.

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