

# Green Infrastructure

## THE IMPORTANCE OF GREEN INFRASTRUCTURE

Green infrastructure is defined as a connected system of landscaped elements, such as parks, living walls, green roofs, streetscape plantings, bioretention such as rain gardens, and mature tree canopies. When linked together, green infrastructure can provide a unified, resilient urban ecosystem that improves both ecological and human health. The most successful systems seamlessly blend these elements into energy, water and waste infrastructure, and enhance the built environment for improved human connections with nature.

Integrating a green infrastructure system into the buildings, sites, and utility infrastructure will result in cost-effective improvements through a living system that:

- › **Cleans** the air and stormwater to enhance urban ecology and improve human health,
- › **Cools** the overall temperature of the area, reducing the heat island effect, decreasing energy costs, and improving habitat and pedestrian comfort, and
- › **Connects** contiguous green spaces along the ground, up living walls, and over green roofs, creating diverse habitat opportunities and connecting people to nature.

There are three green infrastructure elements that work together to improve the urban ecology of the SW Ecodistrict:

- › **Permeable surfaces** - areas on the ground and on roofs that are able to absorb water and oxygen. Permeable surfaces increase the health and vitality of vegetation.
- › **Tree canopy** - the overall area covered by trees. Extensive tree canopy coverage helps reduce the heat island effect, offers greater habitat opportunities, and provides a more comfortable pedestrian experience.
- › **Parks and plazas** - publicly accessible spaces that provide vegetation, increase habitat opportunities, and improve human health. They also contribute to the cultural character of a neighborhood (for more information, please see p.16-17).

## THE AREA TODAY

Typical of many urban areas, the study area is a low-functioning ecosystem that is caused by a number of factors:

- › Approximately 80 percent of the surface is impervious, a state where the ground is unable to absorb water and oxygen.
- › About 50 percent of the study area is built above the ground. Due to weight restrictions, older elevated structures often limit the ability to retrofit streetscapes with a large tree canopy and vegetation.
- › The few areas that are vegetated, including the 10 acres of parks and plazas, are mostly small spaces between a building and the sidewalk that are unsuitable for habitat. They suffer from severely compacted soil, are not properly maintained, and contain non-native invasive species.
- › Only about 8.6 percent of the Study Area is covered by tree canopy, and the surviving trees have limited growth potential. As a comparison, about 37 percent of Washington is covered by tree canopy.

As of June 2012, there were no green roofs, living walls, or bioretention areas that collect and treat stormwater, or other green infrastructure elements in the study area. However, the District of Columbia's 2012 update to the Zoning Regulations requires parcels to calculate and maintain a Green Area Ratio (GAR), a calculation that compares the permeable surfaces, tree canopy and landscaped areas to the overall site area. Based on the District's underlying land use for the Study Area, the GAR is 0.30.