

Why Green Solutions?

Stormwater runoff, and the pollution and sediment it brings, wreak havoc on our local rivers, streams and creeks. Fortunately, there are effective natural solutions to help manage stormwater runoff. Those solutions including tree plantings, bioswales, permeable pavement, rain gardens, riparian tree and shrub plantings, and other native vegetative plantings near and along roadways, parking lots, and sidewalks are collectively known as green infrastructure or natural stormwater management projects.

These green solutions use the living landscape to capture, store, absorb, filter and slow the flow of stormwater runoff at the surface – before it enters sewer systems and eventually local waterways. Green infrastructure projects can be alternatives and/or complements to traditional stormwater-collection methods, such as sewer pipes and drains. And often these greener options are less expensive than the traditional methods.

Why Trees?

Trees are good for business.

Shaded business district = 11% increase in business. -*Center for Urban Horticulture, University of Washington*

Trees help keep people healthy.

Trees outside hospital windows = almost 1 full day less recovery time and fewer pain killers for patients. -*Center for Health Systems and Design, Texas A&M University*

Trees are environmental workhorses.

20,000 new trees = \$800,000 worth of utility savings to our region annually. -*City of Pittsburgh Shade Tree Commission*

Trees play a key role in storm water management.

Large trees can intercept upwards of 2,000 gallons of rainfall annually. -*Midwest Community Tree Guide: Benefits, Costs, and Strategic Planting by McPherson, E. et al.*

Trees help build strong communities.

Planting a tree within 50 feet of a house = increased property value of about 9%. -*Wharton School of Business, University of Pennsylvania*

Trees beautify our communities for generations.

The lifespan of an oak = 400 years or more -*Trees of Pennsylvania by Ann Fowler Rhodes & Timothy A. Block*

Why A Tree Inventory?

In 2014, The Western Pennsylvania Conservancy and the Pittsburgh Shade Tree Commission worked together to fund a comprehensive inventory of the city's street tree population.

Overview

An inventory allowing for a full comparison to be considered on the state of Pittsburgh's urban forest had not been completed since 2005. Since then, WPC has led the implementation of the TreeVitalize Pittsburgh project, which resulted in the planting of approximately 23,000 street trees by 2014. Additionally, PSTC and Tree Pittsburgh managed major tree pruning and removals during this time.

Burgh's Eye View

The tree information is also available via a public interface called Burgh's Eye View, which can be accessed here: <https://pittsburghpa.shinyapps.io/BurghsEyeViewTrees/>

Inventory Summary

Listed below are just a few highlights determined after the completion of the Street Tree Inventory.

- There are 33,498 street trees within the City of Pittsburgh, an increase of almost 4,000 trees since 2005.
- The majority of Pittsburgh's street trees (over 80%) are in good condition, an increase of health by almost 10% since 2005.
- The appraised value of Pittsburgh's street tree population is estimated at more than \$51 million.
- **15 million gallons of stormwater are absorbed by street trees annually.**
- Savings in reduced energy usage amount to roughly \$96,500 per year.
- Approximately 4.4 million pounds of carbon are stored in Pittsburgh's street trees.
- The city receives \$1.51 in benefits for every \$1 spent on municipal forestry practices.

Bioswales

Filled with native plants, rocks and boulders, the bioswales are built and designed to store and slow the release of stormwater. With wide shallow depressions and slopes that are steep enough to prevent ponding, bioswales are gentle enough to encourage water filtering through plants and ground cover. Drains and piles of stones, known as rock weirs, are also built into the design. Not only are bioswales naturally attractive, they are also functional and effective stormwater management and filtration systems. Bioswales are often constructed near roadways and parking lots and are viable alternatives to installing additional underground storm drains.

Point State Park Bioswale

As a gift as part of its centennial celebration, the Garden Club of Allegheny Club (GCAC) commissioned WPC to install an attractive bioswale and rain garden featuring native plants to help manage stormwater runoff in Point State Park.

The bioswale and rain garden was installed in 2015 at the base of the Fort Duquesne pedestrian bridge. Educational signage is available to the park's 2 million annual visitors and provides information on the benefits and effectiveness of natural approaches like bioswales for managing stormwater.

The GCAC Centennial Celebration project partners included GCAC members, the Conservancy, Pennsylvania Department of Conservation & Natural Resources and the Penn State Master Gardeners of Allegheny County.



Millvale Bioswale

Located in a valley surrounded by hills and residential and commercial development, the Borough of Millvale has a long history of flooding. The borough is located within the Girtys Run watershed, which is affected by stormwater runoff that includes sediment like litter, auto fluids and pet waste.

In 2013, the Conservancy completed two bioswales on the property of the Sisters of St. Francis Mount Alvernia as part of the Millvale TreeVitalize project to help reduce stormwater runoff. One of the bioswales, located along Hawthorne Road, is approximately 400 feet long. This bioswale intercepts water from an 11-acre tributary area, and according to monitoring data, **the bioswales capture 89% of all rainfall during rainfall events.** Another bioswale near a parking lot on the property is capturing water from a 1.2-acre area.



Green Parking Lots

The Borough of Carnegie is prone to flooding due in part to its location within the lower Chartiers Creek watershed. So, Carnegie partnered with the Conservancy in 2016 to design, create and plant two new green parking lots in the heart of the central business district. Using a loan from PennVEST, the green parking lots included the installation of trees, bioswales, and native perennial shrubs and flowers. Together with the permeable pavement for the lots, these green features are capturing stormwater and slowly releasing it into the borough's storm drains.

The project created about 10,400 square feet of porous surfaces, including the lots and surrounding vegetation. Planted by community volunteers, these green parking lots are examples of the type of natural greening solutions the Conservancy implements to help manage stormwater runoff. We take a collaborative approach to this type of work – partnering with community residents and leaders, and business owners – and foster similar partnerships for greening project across communities.

Tree Trenches

Walking along East 12th Avenue in Homestead Borough, one might not think twice about the six ginkgo trees near Barrett Elementary School. They're not just your average trees. These trees, planted by students and teachers in 2016, are part of a larger effort to manage stormwater runoff in the borough through the use of natural green infrastructure.

The school is located on a hillside proliferated by concrete and asphalt and sits in the direct path of rushing rainwater during rainfalls. This water travels into the business district a few blocks below and eventually into the borough's combined sewer system, often causing overflows of raw sewage into the Monongahela River during even the smallest rainfall. The tree trenches now help slow and capture this stormwater from the hillside before it reaches the business district.

Tree trenches, also known as infiltration beds, absorb stormwater using a system of soil, trees, native vegetation and rocks strategically connected by underground stormwater drainage. While the trench captures and slowly releases stormwater to prevent overflows, roots from the trees absorb some of the rainwater within the trench. The trees will eventually release the rainwater as evaporation into the air. With grants from the PNC Charitable Trusts and Allegheny County Conservation District, the Conservancy worked in partnership with Barrett Elementary School, Steel Valley School District and Homestead Borough to create and install these tree trenches and plant the trees. At more than 68 feet long, the tree trench in the school's sidewalk is designed to capture and divert up to 4,400 gallons per storm event from entering the sewer system.



Partnering with TreeVitalize means:

- Between 10 and 100 trees will be planted at your location, based on your group's request, capacity and level of experience. The number, species, and type of trees awarded will be determined by TreeVitalize.
- Your group will receive help cutting and removing pavement.
- Your group will receive tree stakes, ties, mulch and watering buckets, as needed.
- Your group will receive priority enrollment for [Tree Tenders](#) training offered at various locations.

The [interactive mapping application](#) showcases the Western Pennsylvania Conservancy's work throughout the region including where TreeVitalize tree plantings have taken place. The tool will generate a custom map that displays different projects on map layers.

Look for the "TreeVitalize" layer to see where TreeVitalize trees have been planted to date. For assistance with the application, please see the [help guide](#).

Submitting an Application

In order for your TreeVitalize Spring 2021 application to be considered, you must contact Jeff Bergman, director of community forestry and TreeVitalize Pittsburgh, at 412-586-2396 or jbergman@paconserve.org, by August 7th, 2020. Please note that submitting an application does not guarantee your group will receive trees; funding for seasonal plantings is limited.