

Green Roof Resource Guide

A guide for services and technologies in Southwestern Pennsylvania



**3 Rivers
Wet Weather**



Improving our region's water quality

What are Green Roofs?

Sometimes they are called a living roof, an eco-roof, or even a rooftop garden. In every case, it's a roof that has been planted with vegetation. And while it's literally as green as the plants that grow there, it's also "green" in the Earth-friendly sense: The plantings can serve as natural insulation, reduce sewage system loads and air pollution, and counter the "heat island" effect (raised temperatures in urban areas). The roof is typically covered with a layer of waterproofing material, then with soil or another planting medium, and planted with grasses, flowers, groundcover, or even shrubs and trees. Irrigation systems are sometimes included. However it's designed, it sure beats old-fashioned black tar on a hot city day.

Why are green roofs important in Southwestern PA?

Many older U.S. cities like Pittsburgh have connected storm and sanitary sewer infrastructure, which are commonly undersized to handle the present day volumes of storm water, resulting in combined sewage overflows (CSOs). CSOs result when excessive storm water overwhelms the sewage collection system through direct connections or leaky pipes, causing raw sewage to overflow untreated into waterways, overflow from manholes, or back up into homeowners' basements. As little as one-tenth inch of rain—an average Pittsburgh rainfall is one-quarter inch—can cause CSOs. The adverse effects of wet weather can last for days. For example, during Pittsburgh's recreational boating season, May 15-September 30, Allegheny County issues river advisories warning individuals using the rivers to limit water contact when sewage overflows have likely contaminated the water with bacteria and viruses. These river advisories are in effect on average during half of the 140-day recreational season.

Sewage overflows present a public health risk. While exposure to disease-causing organisms, such as giardia or cryptosporidium, are not considered fatal for a healthy adult, they can be deadly for those with weaker immune systems, the elderly and small children. CSOs also cause high bacteria levels, lower dissolved oxygen, and can accelerate stream bank erosion, diminish aquatic habitat and increase the risks of flooding. In addition, Pittsburgh's three rivers serve as the main source of drinking water for 90% of Allegheny County residents. While the public water systems do an excellent job of purifying water before sending it to homes, source protection is the cheapest and most effective way to ensure drinking water quality.

Water is an important resource for the economic development of the Pittsburgh region and sewage overflows hinder growth. Because these overflows violate the Clean Water Act, regulatory agencies, such as the U.S. Environmental Protection Agency and PA Department of Environmental Protection, will not permit municipalities to add new connections to the existing sewer system until the overflow problem is fixed. This restriction limits the construction of new businesses and homes in many communities throughout the region—the CSO problem is a critical issue for Pittsburgh's prosperity.

Photos on front cover courtesy of: Highmark (top), Heinz 57 Center (middle) and Carnegie Mellon University (bottom)

Southwestern Pennsylvania Green Roof Locations

Alcoa Technical Center *(Installed 2003)*

100 Technical Drive
Alcoa Center, PA 15069

Carnegie Mellon University Hammerschlag Hall

(Installed 2005)

Carnegie Mellon University Mellon Institute

(Installed 2005)

5000 Forbes Avenue
Pittsburgh, PA 15213

Contact: Barb Kviz
412.268.7858
bk11@andrew.cmu.edu

Conservation Consultants, Inc. *(Installed 2008)*

64 South 14th Street
Pittsburgh, PA 15203

Contact: Michelle Rupert
412.431.4449
micheller@ccicenter.org

Heinz 57 Center/Gimbels Building *(Installed 2001)*

6th Avenue & Smithfield Street
Pittsburgh, PA 15222

Contact: Smithfield Associates
412.566.1818 or
www.roofscapes.com

Highmark, Inc. *(Installed 2008)*

Fifth Avenue Place
120 Fifth Avenue
Pittsburgh, PA 15222

Contact: Phyllis Barber
412.544.5133
phyllis.barber@highmark.com

Huffin Development

213-215 W. 8th Ave. Apartments *(Installed 2007)*

Homestead, PA

Contact: Daniel Steinitz
412.512.2712

Montefiore Hospital *(Installed 1988)*

No other information available.

Phipps Conservatory Welcome Center

(Installed 2005)

One Schenley Park
Pittsburgh, PA 15232

Contact: Richard Piacentini
412.622.6914
PiacentR@phippys.pgh.pa.us

Pittsburgh Children's Museum *(Installed 2005)*

10 Children's Way, Allegheny Square
Pittsburgh, PA 15212

Contact: Chris Siefert
412.322.5058 ext 209
siefert@pittsburghkids.org

Pittsburgh Zoo & PPG Aquarium *(Installed 2007)*

One Wild Place
Pittsburgh, PA 15206

Contact: Susan Pierce
412.365.2574
spierce@pittsburghzoo.org

Shadyside Giant Eagle Grocery Store

(Installed 2005)

5550 Centre Avenue
Pittsburgh, PA 15232

Contact: The Conservation Department
412.963.2542

Slippery Rock University/

Macoskey Center Spring House *(Installed 2004)*

247 Harmony Road

Slippery Rock, PA 16057

Contact: Thomas J. Reynolds
724.738.4050
macoskey.center@sru.edu

Westmoreland County Conservation District

GreenForge Building *(Installed 2006)*

218 Donohoe Road
Greensburg, PA 15601

Contact: Greg Phillips, District Manager
724.837.5271
greg@wcdpa.com

Architects

Burt Hill Kozar Rittleman Associates

Heinz 57 Building
Washington, DC
202.333.2711

Graves Architects

Highbark, Inc.
221-223 4th Ave
Pittsburgh, PA 15222
www.gravesarchitects.com

Green Roof Service, LLC

Hammerschlag Hall, Green Forge Building
9 Lockhart Circle
Forest Hills, MD 21050
443.345.1578
www.greenroofservice.com

IKM Architects

Phipps Conservatory
One PPG Place
Pittsburgh, PA 15222
412.281.1337
www.IKM.com

Indovina Associates Architects

Pittsburgh Zoo and Aquarium
5880 Ellsworth Avenue
Pittsburgh, PA 15232
www.indovina.net

WTW Architects

Carnegie Mellon University
127 Anderson St
Pittsburgh, PA 15212
412.321.0550
wtwarchitects.com

Technologies

The Garland Company

3800 East 91st Street
Cleveland, OH 44105
800.321.9336
www.garlandco.com

Green Living Technologies

191 Imperial Circle
Rochester, NY 14617
631.722.8111
www.agreenroof.com

Green Roof Blocks

11701 New Halls Ferry Road
Florissant, MO 63033
314.974.8010
www.greenroofblocks.com

Roofscapes, Inc

7114 McCallum Street
Philadelphia, PA 19119
215.247.8784
www.roofmeadow.com

WP Hickman Systems

30700 Solon Industrial Parkway
Solon, OH 44139
440.248.7760
www.wphickman.com

Builders

Burns & Scalo Roofing Company Inc.

22 Rutgers Road , Suite 200
Pittsburgh, PA 15205
412.928.3060
www.burns-scalo.com

CentiMark

12 Grandview Circle
Canonsburg, PA 15317
800.558.4100 or 724-743-7000
www.centimark.com

Mascaro Construction Company

1720 Metropolitan Street
Pittsburgh, PA 15233
412.321.4901
www.mascaroconst.com

Phoenix Roofing Company, Inc.

230 Coraopolis Road
Coraopolis, PA 15108
412.778.8845

Sustainable Service Corp.

A Green Build Company
6512 Holibard Ave
Baltimore, MD 21214
410.800.8134
www.sustainable-service.com

Tuscano Maher Roofing (TMR)

373 Moween Road
Saltsburg, PA 15681
800.626.9687
www.tmrroofing.com

Plant Suppliers

Eisler Landscapes, Inc.

1031 New Castle Road
P.O. Box 465
Prospect, PA 16052-0465
724.865.2830
www.eislerlandscapes.com

Emory Knoll Farms

3410 Ady Road
Street, MD 21154
410.452.5880
www.greenroofplants.com

Lichtenfels Nursery

165 Lichtenfels Road
Johnstown, PA 15905
814.288.4790

Scott's Landscaping

110 Maple Dr
Centre Hall, Pa 16828
814.364.2100
www.scottlandscaping.com

Funding Sources

PA Department of Environmental Protection Energy Harvest Program

Office of Energy and Technology Development
400 Market Street, 15th Floor
Harrisburg, PA 17101
717.783.8411
www.depweb.state.pa.us/energy

West Penn Power Sustainable Energy Fund

The Pennsylvania State University
The Energy Institute
WPPSEF Program Administrator
C-211 CUL
University Park, PA 16802-2323
Phone: 814.865.4802
www.wppsef.org

Performance Monitoring

Carnegie Mellon University

Dr. David Dzombak
5000 Forbes Ave
119 Porter Hall
Pittsburgh, PA 152213
412.268.2946
dzombak@cmu.edu

Pennsylvania State University

Center for Green Roof Research
Dr. Rob Berghage
102 Tyson Building
Pennsylvania State University
University Park, PA 16802
814.863.2190
rdb4@psu.edu
hortweb.cas.psu.edu/research/greenroofcenter

University of Pittsburgh

Dr. Ronald Neufeld
Department of Civil Engineering
999 Benedum Hall
Pittsburgh, PA 15261
412-624-9874
neufeld@pitt.edu

Other Useful Links

Green Building Alliance Pittsburgh
www.gbapgh.org

Green Roof Chicago Tour
www.madisonenvironmental.com/events_greenrooftour.html

Green Roof Plants
www.greenroofplants.com

Green Roofs for Healthy Cities
www.greenroofs.net

Low Impact Development Center
www.lid-stormwater.net/greenroofs/greenroofs_home.htm

Selected Readings

Chesapeake Bay Green Roof Demonstration Projects
www.lowimpactdevelopment.org/lid%20articles/green%20roof%20demo%20project%20feb06.pdf

Environmental Valuation and Cost Benefit News-Green Roofs
www.envirovaluation.org/index.php?title=orlando_sentinel_www_sun_sentinel_com&more=1&c=1&tb=1&pb=1

EPA: Heat Island – What Can Be Done-Green Roofs
www.epa.gov/heatisland/strategies/greenroofs.html

Kings County Green Roof Study Final Report
www.metrokc.gov/dnrp/swd/greenbuilding/documents/KCGreenRoofStudy_Final.pdf

Toronto Goes Green
www.treehugger.com/files/2006/02/toronto_goes_gr_1.php

About 3 Rivers Wet Weather

3 Rivers Wet Weather (3RWW) is a non-profit organization created in 1998 to support Allegheny County municipalities in addressing the wet weather sewage and stormwater overflow issue. During nearly every rainfall or snow melt, excess storm water gets into the municipal sewer systems causing untreated sewage to overflow into area streams and rivers—a violation of the federal Clean Water Act (CWA). System-wide, municipalities in the Allegheny County Sanitary Authority (ALCOSAN) service area have been complying with an administrative consent order since 2004 that requires municipalities to complete sewer assessments, repair defects, conduct flow monitoring and develop a long-term wet weather plan in conjunction with ALCOSAN, who began compliance with a federal consent decree in 2008.

As part of its municipal support, 3RWW is helping municipalities to evaluate source control alternatives through green infrastructure solutions.

Over the last several years, 3RWW has supported several Green Roof demonstration projects throughout the Pittsburgh region, including the following:

- Shadyside Giant Eagle (Shadyside): Renovation and expansion of an existing commercial building. Extensive roof with five-inch growing medium using non-invasive, drought resistant plants. Excess stormwater will be captured in cisterns and provide grey water for other uses.
- Hammerschlag Hall/CMU (Oakland): Renovation of an existing building on the CMU campus. Extensive green roof collects discharge from adjacent main roof area; Pennsylvania native plants used.
- 213-215 E. Eighth Avenue (Homestead): Renovation of an existing commercial/residential building on the main street of Homestead. Extensive green roof for residents of the lofts on the upper floors.

3 Rivers Wet Weather continues to build partnerships with the Highmark Foundation, Allegheny County and The City of Pittsburgh to encourage and build incentives for green roof development throughout the region.

3RWW is also a member of the Rain Garden Alliance, a collaborative effort of nonprofit organizations, corporate entities, education institutions, and government agencies working together to encourage and facilitate the installation of rain gardens as one method of addressing the combined sewage overflow (CSO) and other wet weather runoff issues that plague Southwestern Pennsylvania. (<http://raingardenalliance.org>)

Green Roof Supporters:



COUNTY OF ALLEGHENY

DAN ONORATO
COUNTY EXECUTIVE



pennsylvania environmental council

THE
PENN STATE
CENTER
ENGAGING PITTSBURGH

3 Rivers
Wet Weather 
Improving our region's water quality

3901 Penn Avenue, Bldg. #3
Pittsburgh, PA 15224
412-578-8375
www.3riverswetweather.org