

PNC Smart Home

Overview of Storm Water Features

Landscaping that Works

The yard of PNC SmartHome is an urban oasis of beautiful gardens. It's also packed with "inner beauty" features that save money, time, and precious natural resources.



Trees and plants

Plants are predominantly native to Northeast Ohio and the Great Lakes region. Trees, shrubs, perennials and grasses are arranged to play useful roles beyond enhancing the appearance of the house and its site.

Deciduous oak and river birch trees provide shade from summer suns once they begin to mature. Large canopies soften the house structure and provide habitat for nesting birds.

Ornamental serviceberries, elderberries and choke cherries grow fruits that attract birds.

Native shrubs, perennials and grasses provide seasonal interest with colors and textures of their foliage and flowers throughout the growing season.

The rain garden includes plants that can tolerate both wet and drought conditions of the seasons while absorbing runoff from pavements and roofs.

Sand barren landscape plants were indigenous to Wade Oval's sandy soils before the area was settled.



From top: Oak leaves, Cleveland Museum of Natural History; Common Snowberry, Leonora Enking (Creative Commons Attribution License); Butterfly Weed, Cleveland Museum of Natural History; Blue indigo, Kim Carpenter (Creative Commons Attribution License); Bracken fern, Cleveland Museum of Natural History



Pervious pavements: Pervious concrete, pavers, and crushed stone enable runoff to drain directly through the pavement into a stone base below, keeping it out of the sewers.

Cistern: This container can store up to 500 gallons of stormwater runoff from 875 square feet of roof area. Reclaimed water is used in the watering of plants in the landscape.

Entry plaza: Rain-fed water feature provides seasonal sound and visual interest as water flows from the roof to the rain garden.

Rain garden: These features collect and slow the rapid flow of stormwater runoff. They lessen stress on storm sewers and filter contaminants that might otherwise flow out to natural waterways like Doan Brook and Lake Erie.

Solar array: A pole-mounted solar array with manual sun tracking system helps to power SmartHome.

Smart lawn: Fescue sod requires less water and chemicals than typical grass. Low-mow grass variety in seeded areas requires less maintenance.



A rain garden collects runoff from the south side of the roof. The garden is sized per recommendations in *Rain Garden Manual for Homeowners* (Geauga SWCD, 2006). Homeowners that install rain gardens sized per these recommendations would receive a credit on their storm water utility bills under the program proposed by the Northeast Ohio Regional Sewer District.



A cross section of a rain garden. Note the various soil layers to promote infiltration of runoff.



Runoff is conveyed to the rain garden via a rain chain and through a series of infiltration trenches before it reaches an underground pipe that outlets into the rain garden. This type of flow path reduces the volume of rainfall that turns into runoff that must subsequently be managed.



Runoff from the north side of the roof is conveyed to a cistern. The collected runoff can be put to useful purposes such as watering the landscaping. The cistern is sized to the volume required to receive a credit under the proposed NEORS D storm water program. When the cistern is full, runoff is directed via a pipe through a grass filter rather than being piped directly to a storm sewer.



There are a number of alternatives to conventional paving for driveways, sidewalks and patios. Three alternatives are in use at this facility: pervious concrete, pervious pavers and gravel. All of these surfaces will produce less runoff than conventional concrete or asphalt.