

PLANT SELECTION + CARE

A vibrant, multi-colored garden scene featuring a variety of plants. In the foreground, there are several purple and pink flowers, some with dark centers, and a few white flowers. The middle ground is filled with a dense mix of green foliage, including tall grasses and various flowering plants in shades of red, orange, and yellow. The background shows more greenery and a few taller plants, creating a sense of depth and a rich, natural environment.

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LANDSCAPE PRACTICES TODAY

- Commercial and residential outdoor water use in the United States accounts for more than seven billion (7,000,000,000) gallons of water each day. (U.S. EPA)
- Yard and landscape trimmings contribute approximately 32 million tons to the municipal waste stream, representing more than 13 percent of total municipal waste in the United States. (U.S. EPA, 2006)
- Gasoline-powered landscape equipment, including mowers, trimmers, blowers, and chainsaws, accounts for 16 percent of hydrocarbon emissions and 21 percent of carbon monoxide emissions from mobile sources nationwide. (U.S. EPA, 2003)



SUSTAINABLE LANDSCAPE PRACTICES

RAIN GARDENS:

- Provide valuable wildlife habitat
- Use native plants that are water and climate tolerant
- Add aesthetics to the landscape
- Recharge groundwater sources
- Protect communities from flooding and drainage overflow
- Reduce maintenance costs
- Control stormwater and nonpoint source pollution



NATIVE PLANTS

NATIVE PLANTS:

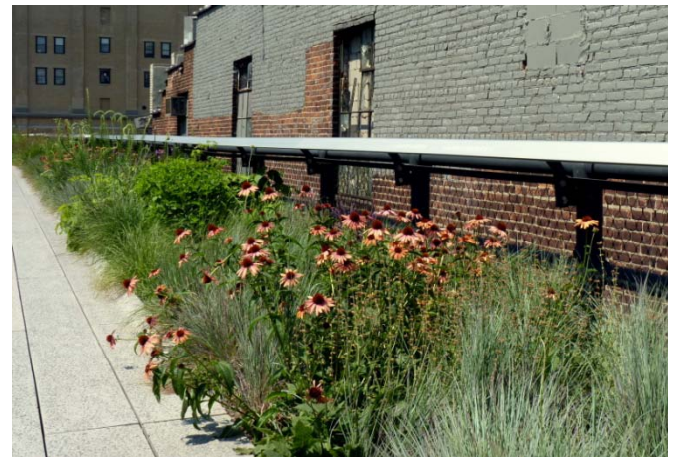
- Provide habitat areas
- Reduce the need for irrigation
- Reduce the need for maintenance
- Reduce the use of fertilizer
- Reduce the use of pesticides
- Absorb water more efficiently than turf-style grasses



NATIVE PLANTS

The Highline, NYC

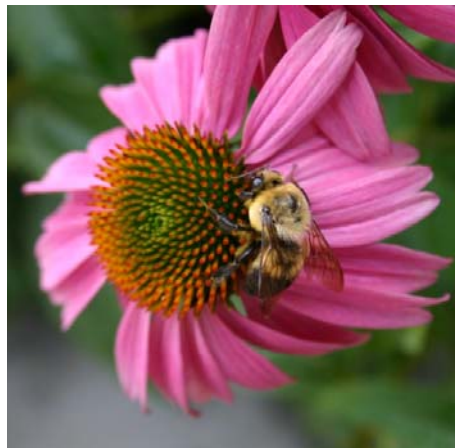
- James Corner Field Operations
Landscape Architect
- Piet Oudolf
Planting Designer



PLANTING DESIGN

APPROACH:

- Establish preferred design aesthetic
- Understand site constraints and conditions
- Select appropriate plant palette
- Prepare planting design plan



DESIGN AESTHETICS

Traditional design:

- Shrub bed
- Perennial garden
- Hedges



Naturalized design:

- Butterfly garden
- Meadow (warm season grasses + wildflowers)
- Buffer plantings



SITE CONSTRAINTS + CONDITIONS

Things to consider:

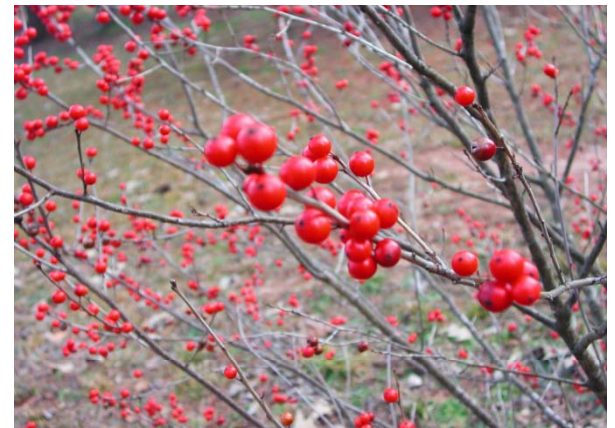
- Sun vs. Shade
- Exposure + Wind
- Soil Characteristics
- Hydrologic Conditions
- Road Salts
- Vehicle and/or Pedestrian Traffic



PLANTING PALETTE

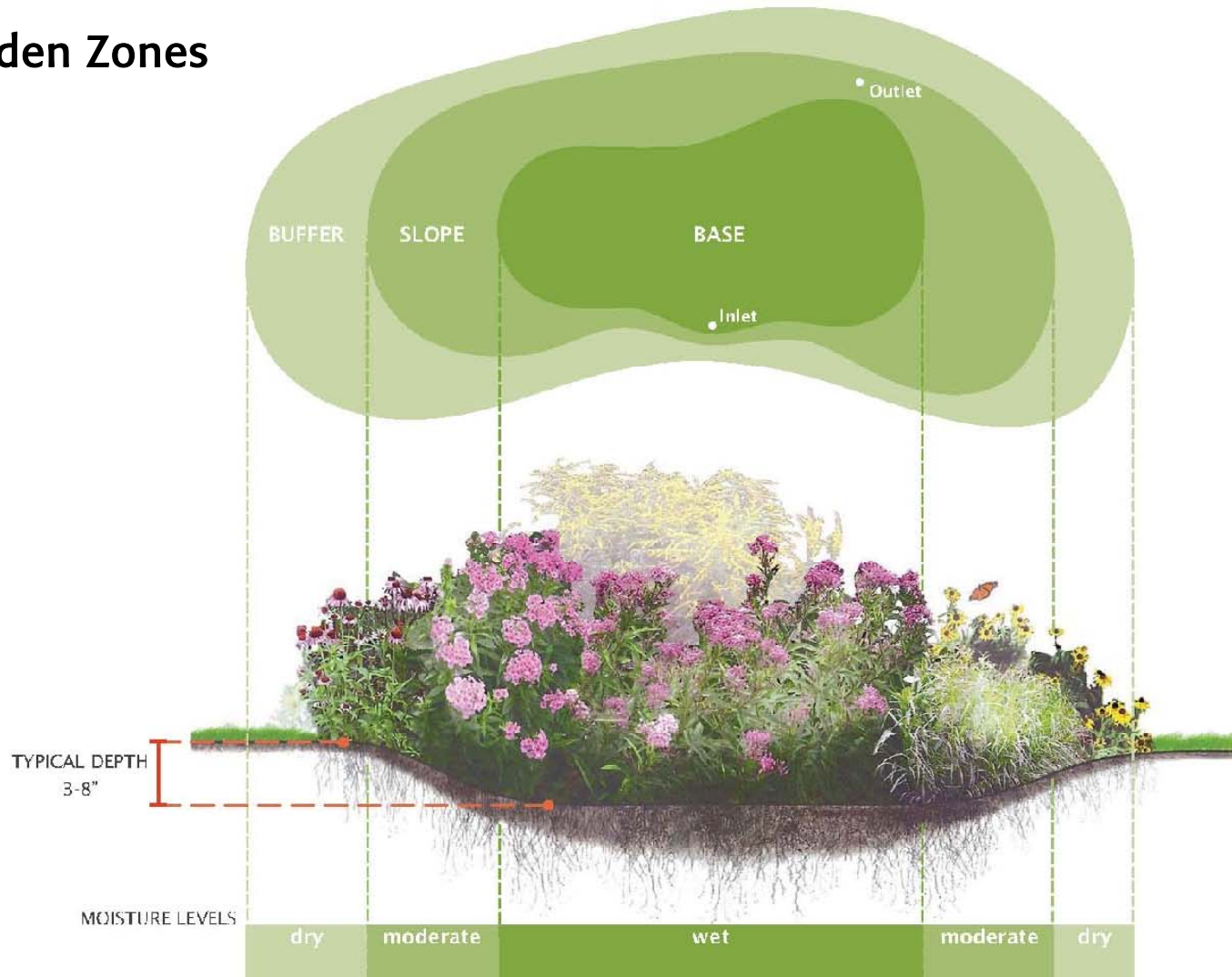
Choose plant species based upon:

- **Suitability to Site**
 - well adapted to existing conditions (native plants!)
- **Mature Plant Size**
 - proximity to buildings + utility lines
 - pruning and shaping
- **Seasonal Interest**
 - flowers
 - fall color
 - winter interest
- **Beneficial to Wildlife**
 - flowers for butterflies + insects
 - fruits for song birds



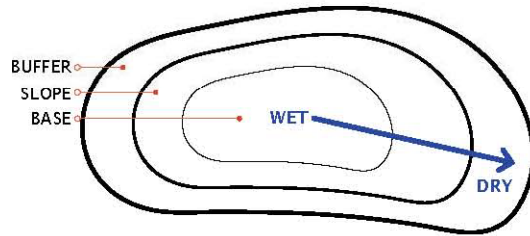
PLANTING DESIGN PLAN

Rain Garden Zones



PLANTING DESIGN PLAN

Rain Garden Zones



GRASSES AND GROUNDCOVERS

BASE

- Bluejoint Grass (*Calamagrostis canadensis*)
- Sedges (*Carex spp.*)
- Fowl Mannagrass (*Glyceria striata*)
- Soft Rush (*Juncus effusus*)

SLOPE

- Big Bluestem (*Andropogon gerardii*)
- Switchgrass (*Panicum virgatum*)
- Virginia Wild-rye (*Elymus virginicus*)
- Wood Grass (*Sorghastrum nutans*)

BUFFER

- Bearberry (*Arctostaphylos uva-ursi*)
- Broomsedge (*Andropogon spp.*)
- Indiangrass (*Sorghastrum nutans*)
- Little Bluestem (*Schizachyrium scoparium*)
- Panic Grass (*Panicum virgatum*)
- Switchgrass (*Panicum virgatum*)
- Deer Tongue (*Dichanthelium clandestinum*)

WILDFLOWERS AND FERNS

BASE

- Blue Lobelia (*Lobelia siphilitica*)
- Blueflag Iris (*Iris virginica shrevei*)
- Boneset (*Eupatorium maculatum*)
- Cardinal Flower (*Lobelia cardinalis*)
- Seaside Goldenrod (*Solidago sempervirens*)
- Marsh Marigold (*Calthus palustris*)
- Monkey Flower (*Mimilus ringens*)
- Rose-mallow (*Hibiscus moscheutos*)
- Royal Fern (*Osmunda regalis*)
- Swamp Milkweed (*Asclepias incarnata*)
- Turtlehead (*Chelone glabra*)

SLOPE

- Blazing Star (*Liatris spicata*)
- Cinnamon Fern (*Osmunda cinnamomea*)
- Columbine (*Aquilegia spp.*)
- Coreopsis (*Coreopsis*)
- Ironweed (*Vernonia noveboracensis*)
- Joe-pye Weed (*Eupatorium spp.*)
- New England Aster (*Aster novae-angliae*)
- New York Aster (*Aster novi-belgii*)
- Sensitive Fern (*Onoclea sensibilis*)

BUFFER

- Black-eyed Susan (*Rudbeckia laciniata*)
- Butterfly Weed (Milkweed) (*Asclepias tuberosa*)
- Purple Coneflower (*Echinacea purpurea*)
- Wild Indigo (*Baptista tinctoria*)
- Wild Bergamont (*Monarda didyma*)

TREES AND SHRUBS

BASE

- Buttonbush (*Cephalanthus occidentalis*)
- Cranberrybush Viburnum (*Viburnum trilobum*)
- Green Ash (*Fraxinus pennsylvanica*)
- River Birch (*Betula nigra*)
- Silky Dogwood (*Cornus amomum*)
- Swamp White Oak (*Quercus bicolor*)

SLOPE

- Green Ash (*Fraxinus pennsylvanica*)
- Red Maple (*Acer rubrum*)
- Red-twig Dogwood (*Cornus sericea*)
- River Birch (*Betula nigra*)
- Serviceberry (*Amelanchier canadensis*)
- Sweetpepperbush (*Clethra alnifolia*)
- Sweetbay Magnolia (*Magnolia virginiana*)
- Winterberry Holly (*Ilex verticillata*)

BUFFER

- American Holly (*Ilex opaca*)
- Arrowwood Viburnum (*Viburnum dentatum*)
- Bayberry (*Myrica pensylvanica*)
- Hackberry (*Celtis occidentalis*)
- Lowbush Blueberry (*Vaccinium angustifolium*)
- Red Bud (*Cercis canadensis*)
- Red Oak (*Quercus falcata*)
- White Oak (*Quercus alba*)
- Witchhazel (*Hamamelis virginiana*)

PLANT SPACING

<u>Spacing</u>	<u>Plants per ft²</u>
12" on center	4.00
18" on center	1.00
24" on center	.25
30" on center	.16
3' on center	.11
5' on center	.04



PLANTING DESIGN

Aesthetic Considerations

- Plant Layering
- Plant Massing
- Unity + Repetition
- Maintaining Balance
- Accents + Focal Points
- Keep it Simple



Thomas Muse

PLANTING DESIGN

Layering Plantings

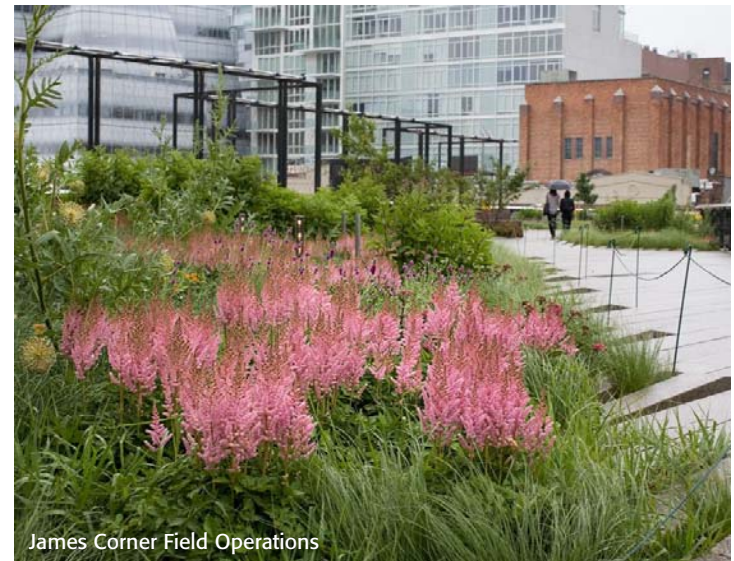
- Create depth by planting larger plants behind smaller plants
- Develop structure for the intended design
- Be sure to plant the right size plants in the right place – consider proportions



PLANTING DESIGN

Massing Plantings

- Plant in groups to provide visual impact
- Direct viewers eye toward desirable view
- Direct viewers eye away from undesirable view
- Massing several of the same species together minimizes impact of individual plant die-off



PLANTING DESIGN

Unity + Repetition

- Complement existing landscape plantings and features
- Respect architecture, spaces, and community aesthetics
- Consistency in plant character provides unity
- Build on a selected theme to provide repetition



USEPA. 2009. Green Infrastructure Case Studies



James Corner Field Operations

RAIN GARDEN DESIGN

A Balanced Landscape Design

- Keep the plantings in context with the property or site
- Respect the complexity of plant texture and color
- Direct viewers eye away from undesirable view
- Plan for 'up-close' and 'distant' experiences



PLANT SELECTION

Similar Colors, Different Forms



James Corner Field Operations/Piet Oudolf

PLANT SELECTION

Similar Forms, Different Colors



James Corner Field Operations/Piet Oudolf

RAIN GARDEN DESIGN

Establishing a Focal Point or Accent

- Incorporate landscape elements such as boulders, a stone path, or a bench
- The rain garden itself can be a focal point
- Use purposeful massings of flowering plant species
- Include a specimen tree or shrub



RAIN GARDEN DESIGN

Keep it Simple!

- Focus on only one or two themes
- Consider seasonal changes
- Consider long-term maintenance needs
- Plan for succession and maturity
- Thoroughly investigate existing site conditions



May



June



July



August



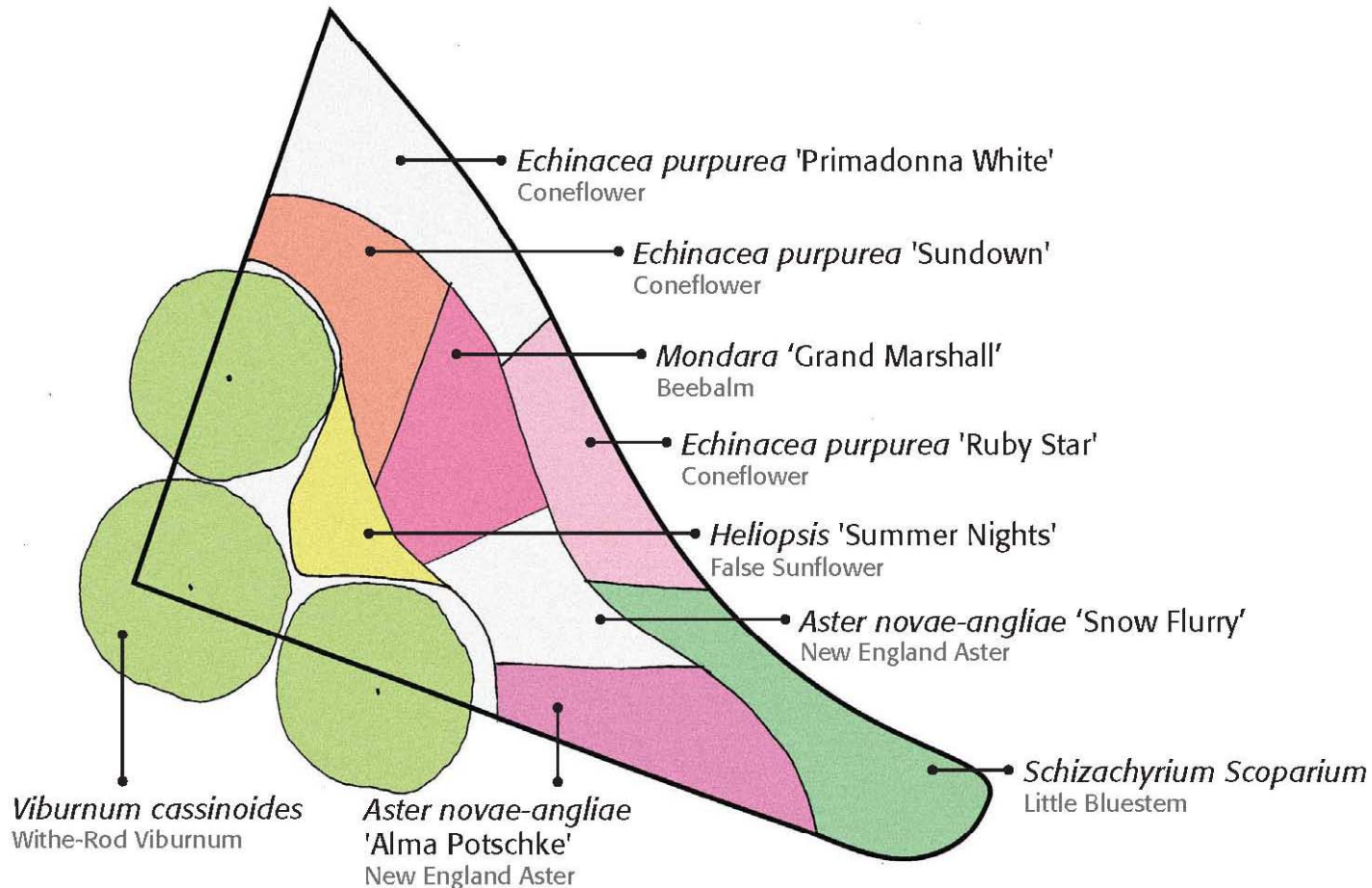
September



October

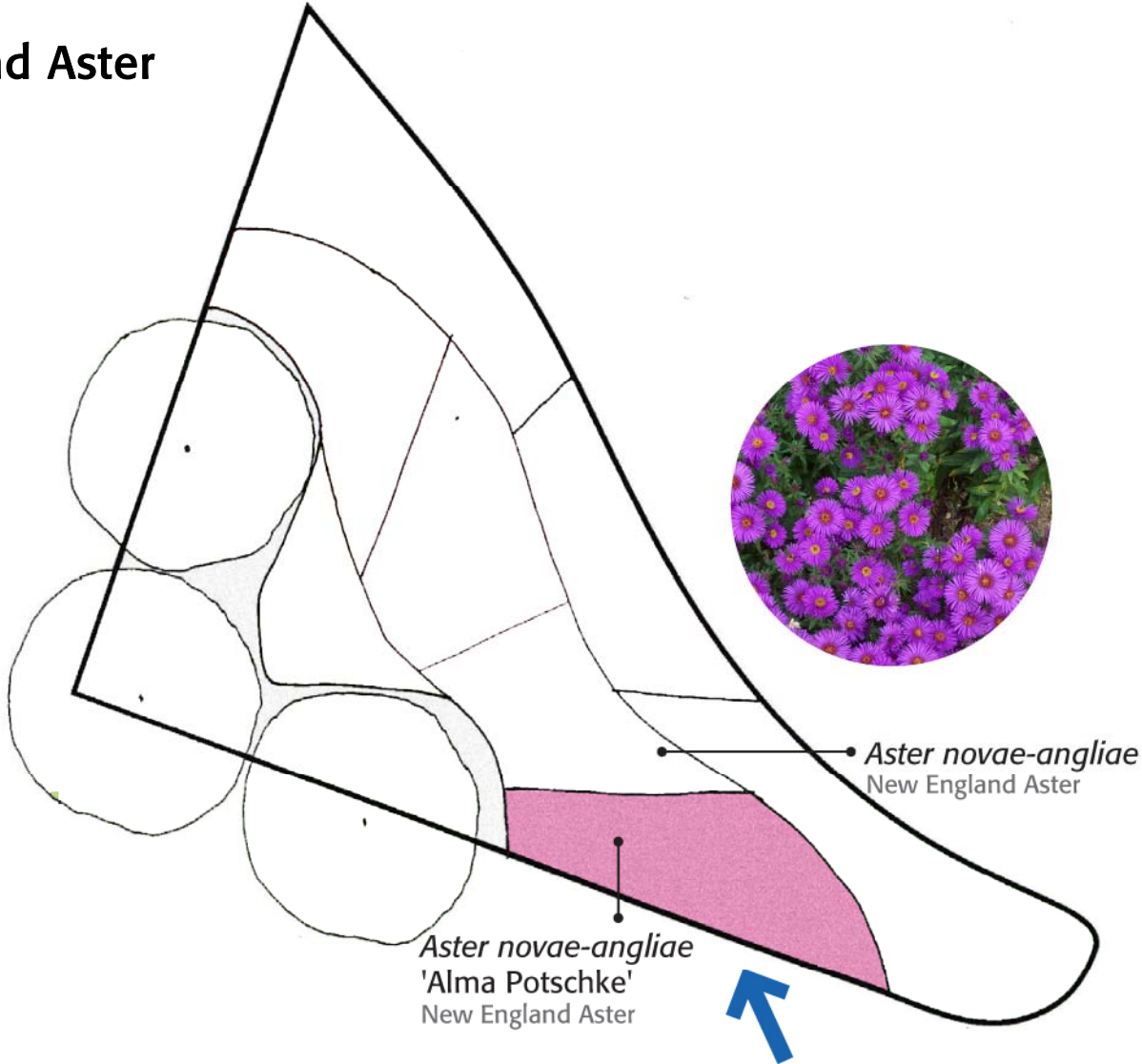
CLASSICAL MAGNET RAIN GARDEN

Planting Plan



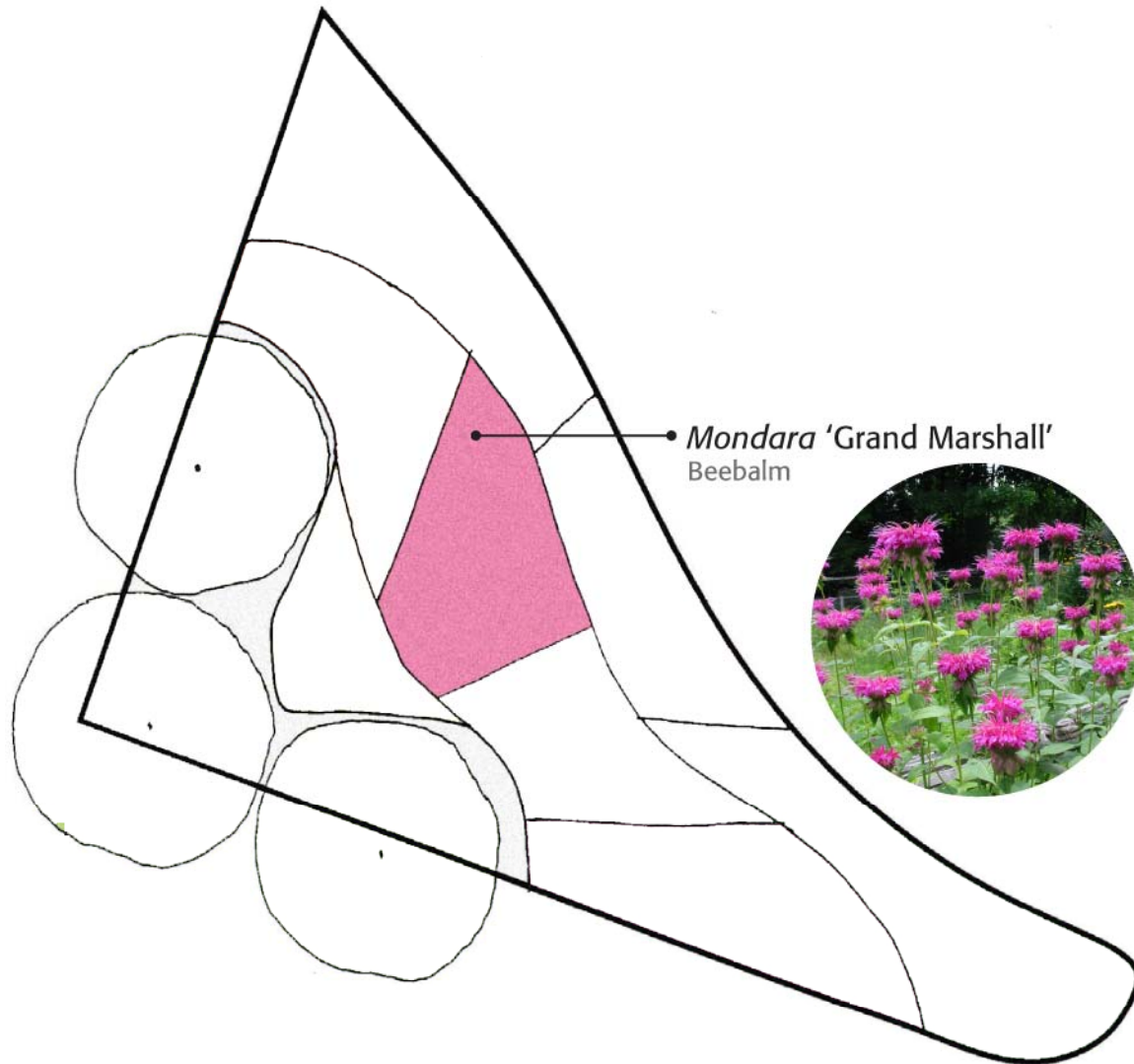
CLASSICAL MAGNET RAIN GARDEN

New England Aster



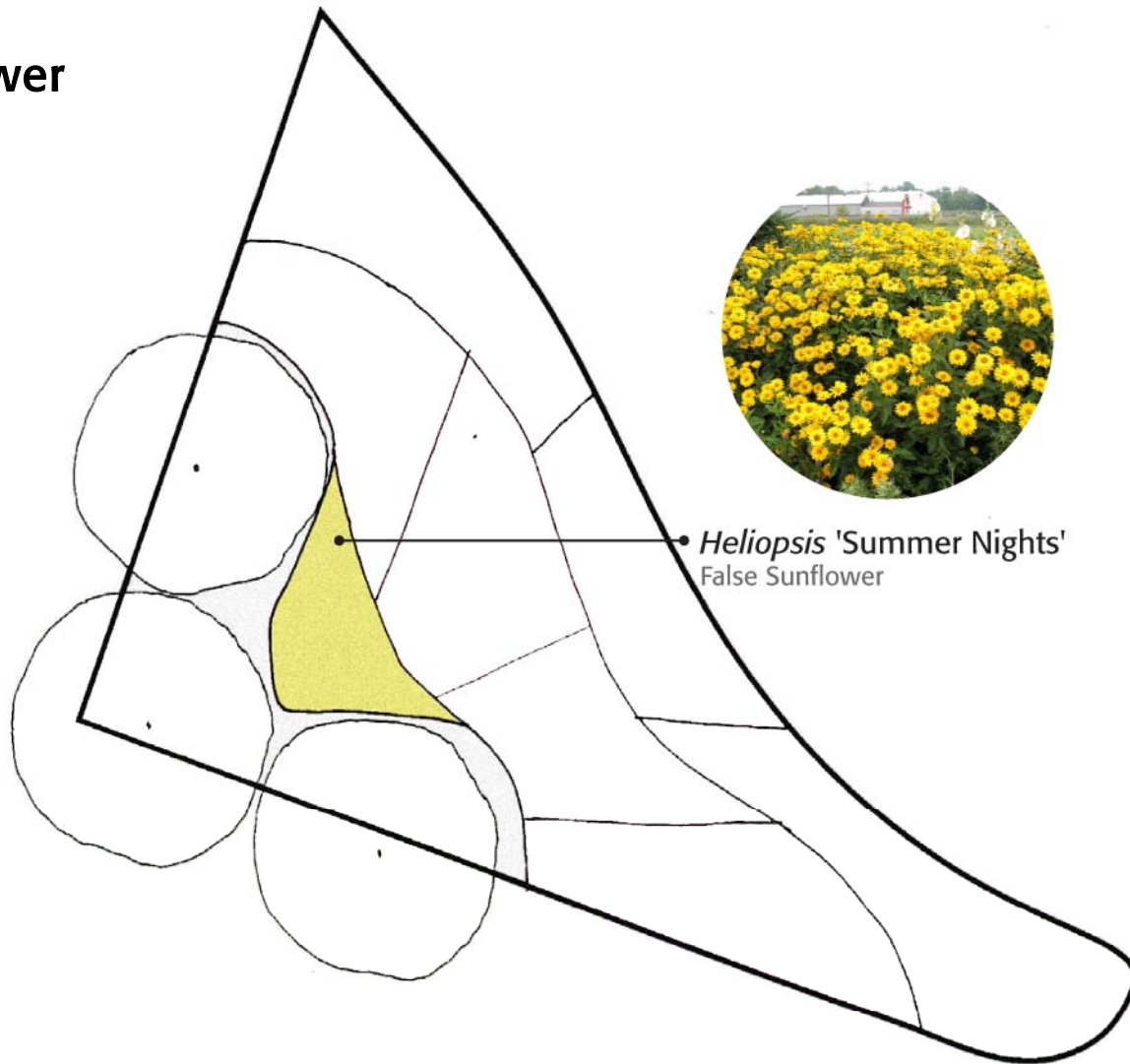
CLASSICAL MAGNET RAIN GARDEN

Beebalm



CLASSICAL MAGNET RAIN GARDEN

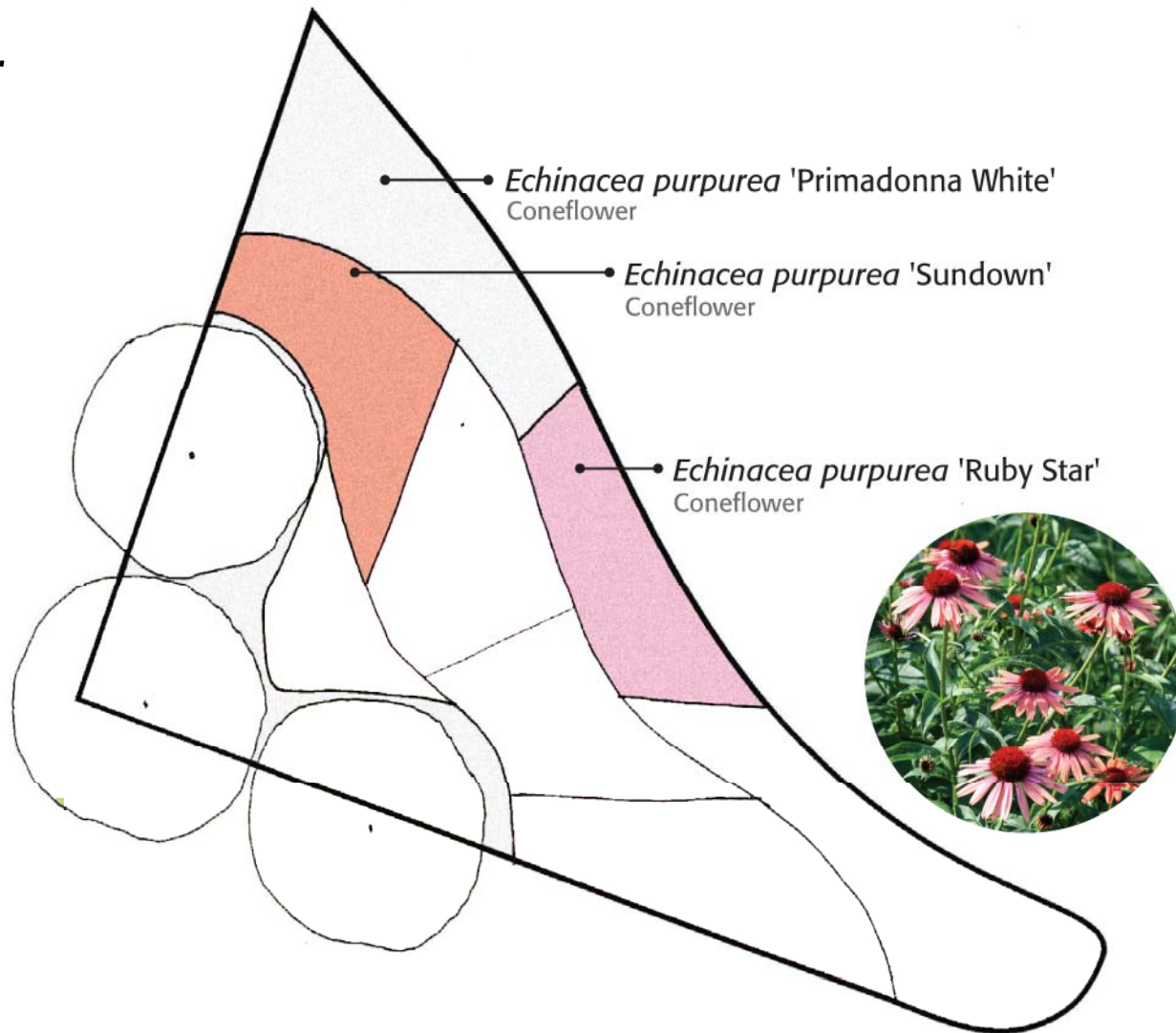
False Sunflower



Heliopsis 'Summer Nights'
False Sunflower

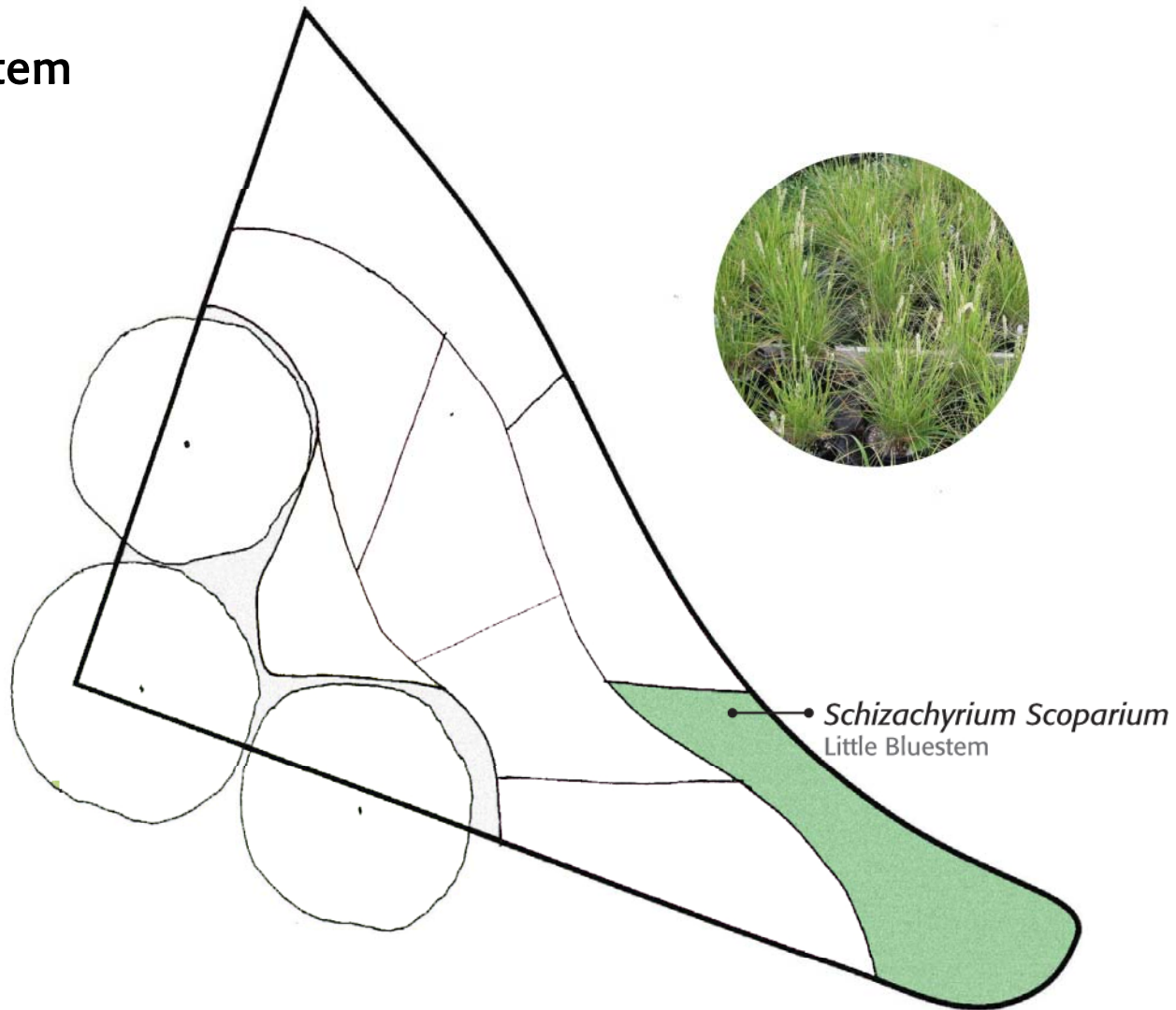
CLASSICAL MAGNET RAIN GARDEN

Coneflower



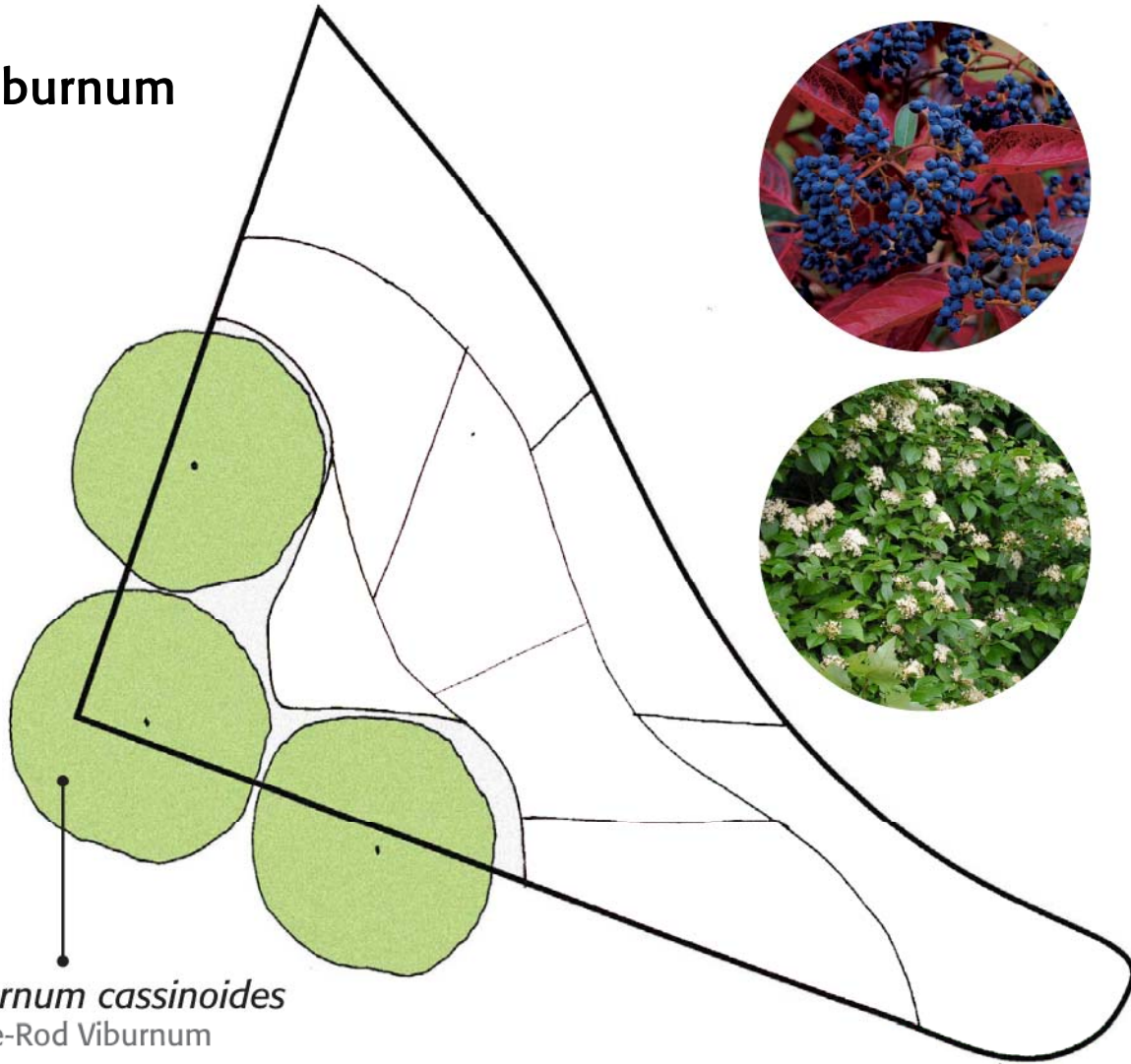
CLASSICAL MAGNET RAIN GARDEN

Little Bluestem

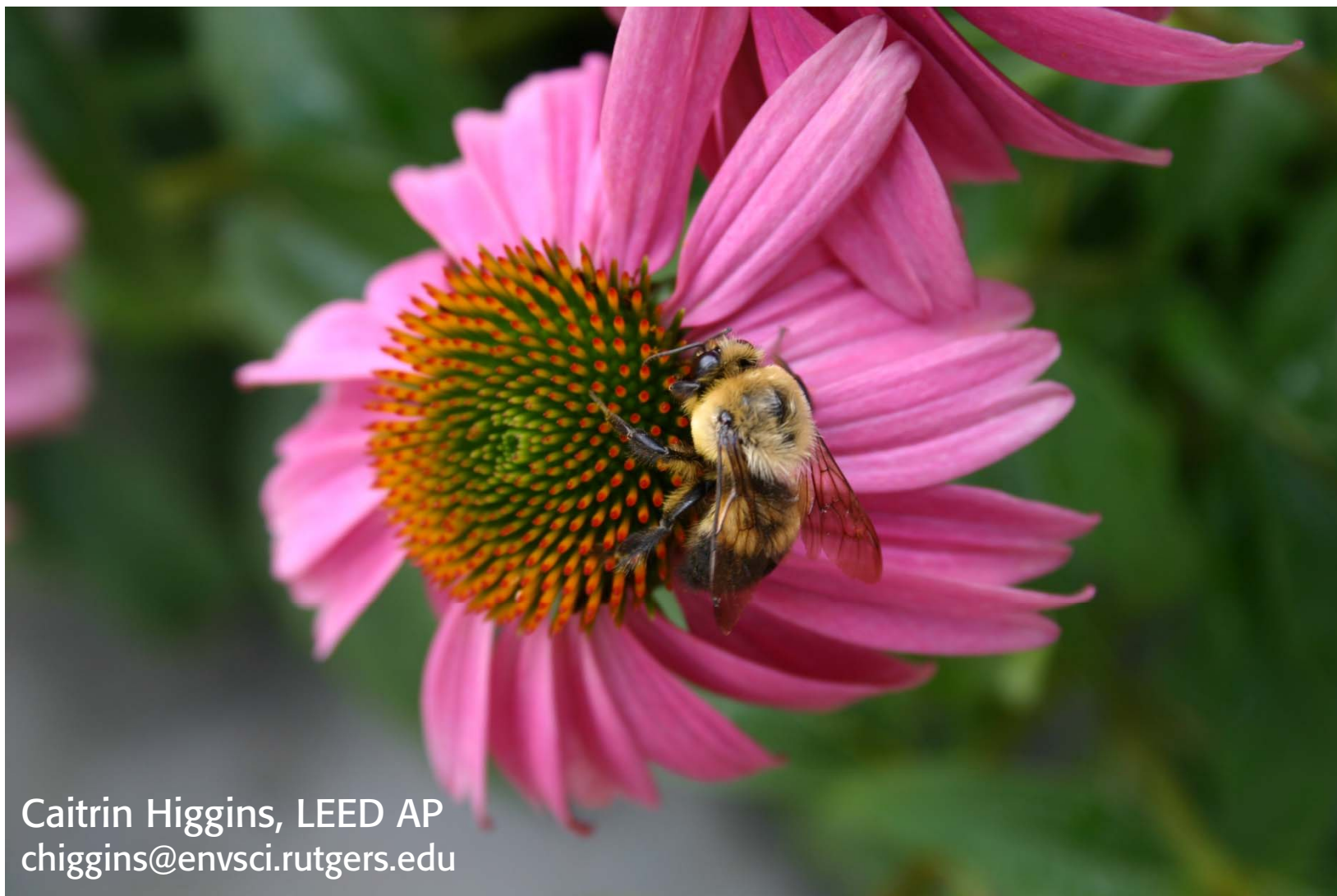


CLASSICAL MAGNET RAIN GARDEN

Withe-Rod Viburnum



Viburnum cassinoides
Withe-Rod Viburnum



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RUTGERS
New Jersey Agricultural
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