

STORM WATER DETENTION POND

MANAGEMENT CONSIDERATIONS OAK RIDGE NATIONAL LABORATORY



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LOCATION

The stormwater detention facility is located just North of Bethel Valley Road, and South of the large Conference Center parking lot, which it drains.





View across pond, facing Northwest



View across pond, facing South

The pond is fed by two drainages. One enters the pond in the Northeast corner and conveys surface flow from the Eastern end of the parking lot and seasonal flow from an ephemeral stream due East of the parking lot access road. For our purposes, we will refer to this as the “East Drainage”. The other conveyance, or “West Drainage”, is a ditch which receives surface flow from the West end of the parking lot and sheet flow from the lawn area due West of the pond.





View of East Drainage, facing Northeast



View of West Drainage, facing Northwest

PROBLEMS AND SOLUTIONS

The term “detention” is used to describe this facility, although some water is retained. A typical “retention” facility, however, holds water indefinitely. The pond in question retains wetland characteristics, but is designed to temporarily hold storm waters and allow for the slow infiltration into the storm water system. This also allows large volumes of water to drop any acquired sediment loads, ideally minimizing silt input into the nearest natural water body. Stormwater retention and detention facilities are typically managed by mowing. Unfortunately, this minimizes the potential for creating wildlife habitat and maximizes the potential for erosion. Stormwater facilities, be they ponds or surface conveyances, have the ability to serve as ‘green infrastructure’. The pond could be managed as a wetland, a home for various plant and animal species, while still serving its function as a flood control device.

The stormwater detention facility is currently unmanaged, which has allowed for the early successional growth of many wetland species. The areas around the pond and adjacent drainages, however, are being mowed, often to the water’s edge. This is contributing to several erosion problems.



 AREAS OF EXPOSED SOIL

 DRAINAGE AREAS WITH SIGNIFICANT SCOURING



Erosion in East drainage, caused by scouring from storm water, which results from mowing and improper channelization.



Exposed soil along banks of pond, resulting from construction activity and subsequent mowing. Soil is devoid of nutrient layer, overly compacted, and does not support lawn grasses.



Erosion in West drainage, caused by shearing from storm water, which results from mowing and improper channelization.

PROBLEM: Erosion of the East and West drainages.
Increasing silt load into pond.
Creating ideal habitat for mosquitoes.

SOLUTION:

- Widen drainage channels, giving them a shallower profile, and allow water to meander through them.
- Amend soil on the banks of the drainages with a compost-based soil builder.
- Plant or stake the channel with with appropriate vegetation that is both flood and drought tolerant.
- Leave a 10' buffer strip on either side of the drainage, plant with drought tolerant species. Do not mow.

RESULT: Functional and aesthetic "rain gardens".
Decreased silt load into pond.
Create ideal habitat for wildlife.

PROBLEM: Exposed soil along banks of detention pond, increasing silt load into pond.

SOLUTION:

- Widen drainage channels, giving them a shallower profile, and allow water to meander through them.
- Amend soil on the banks of the drainages with a compost-based soil builder.
- Plant the banks with appropriate drought-tolerant vegetation.
- Do not mow.

RESULT: Increased biodiversity of the pond area.
Decreased silt load into pond.
Create ideal habitat for wildlife.

Another issue that presents itself within the context of the storm water detention pond is the colonization of aggressive plant species. Most notable are Cattail (*Typha latifolia*), Green Ash (*Fraxinus pennsylvanica*), and Black Willow (*Salix nigra*). Although native, and of considerable value to wetland ecology, these species have a tendency to invade recently disturbed hydric soil areas rapidly, growing quickly to crowd and/or shade out other desirable species. The result is a decrease in biodiversity, a change in available sunlight to the ground plane, and the collection of soil, which eventually changes the moisture regime. At present, Cattail is most prevalent near the nexus of the West Drainage and near the outfall at the South end of the pond. Black Willows are dense within the same areas. Green Ash is scattered throughout the pond proper, mostly existing as 1-2' seedlings along the fringes of the wetter areas.



Cattail
Typha latifolia



Black Willow
Salix nigra

Dense growth of Cattail and Black Willow, adjacent to the outfall of the West Drainage.



Green Ash *Fraxinus pennsylvanica*

Dense growth of Green Ash seedlings along the banks of the pond.

PROBLEM: Rapidly colonizing plant species.
Potential for monoculture, leading to decreased biodiversity.
Change in light dispersion to ground plane, leading to further loss of biodiversity.
Long-term change in moisture regime, leading to a decrease in water volume holding capacity and viable wetland habitat within the pond.

SOLUTION:

- Selectively thin out Green Ash and Black Willow seedlings and saplings. Favor only 1-2 trees of each species to be allowed within the detention area. Allow for the growth of less aggressive trees, such as Sycamore (*Platanus occidentalis*) or Sweetgum (*Liquidambar styraciflua*).
- Cattails can be difficult to remove, except by special equipment. To avoid damage to the wetland, consider letting trees grow in the areas where Cattail growth is the most concentrated. This will cut off the availability of sunlight, detrimental to this sun-loving species.
- Plant or stake a variety of (appropriate) native wetland species.

RESULT: Increased biodiversity.
 Improved aesthetic appeal.
 Control of changes in light or moisture.
 More varied and productive habitat.

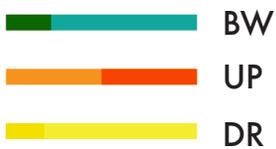
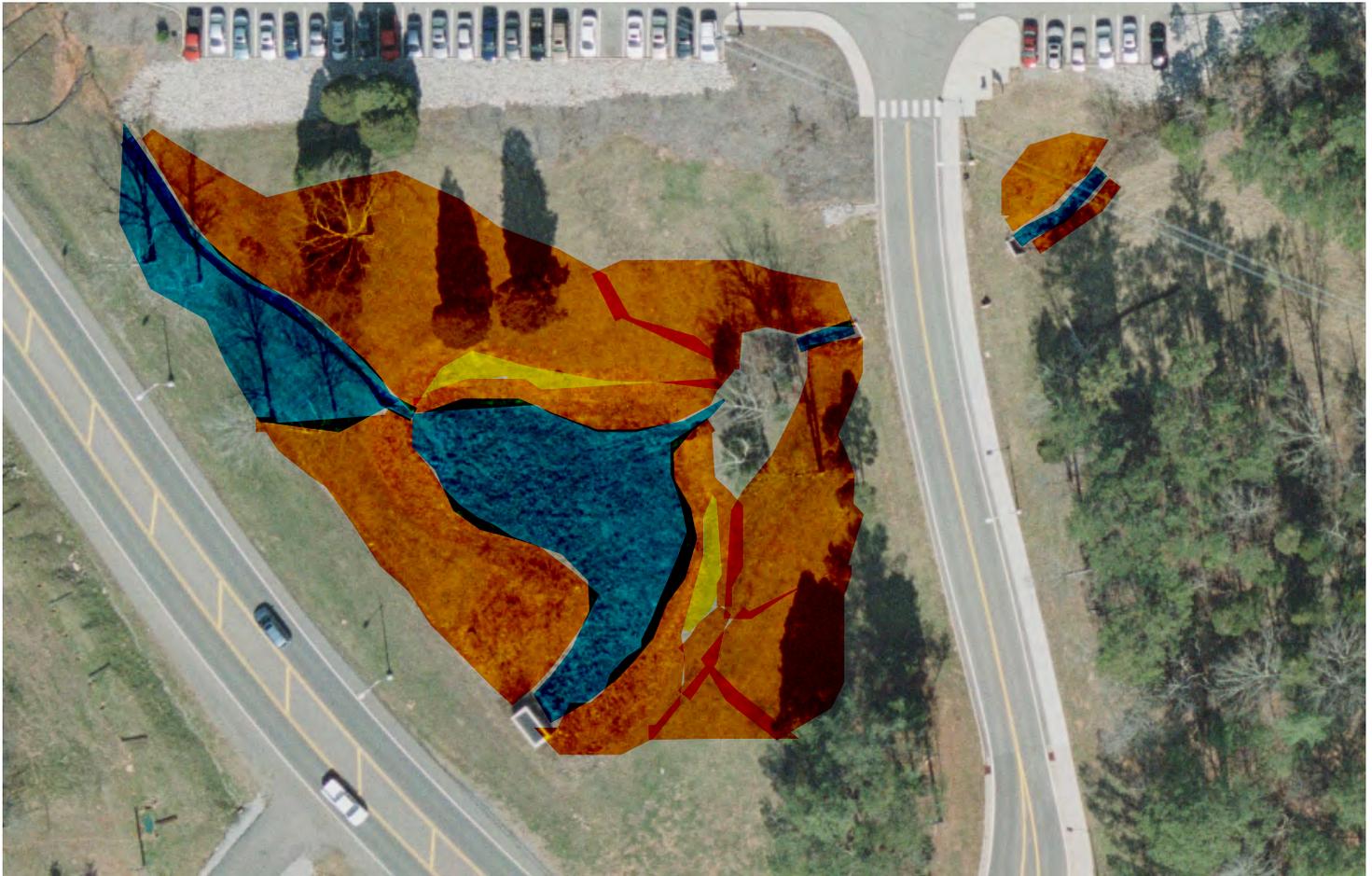
VEGETATION MANAGEMENT: ZONING

When considering what to plant in the storm water detention facility and adjacent drainage areas, it is useful to divide the areas to be planted into different zones, based on soil moisture and regimes. For our purposes, we will refer to them as follows:

BW (Bottomland/Wetland): Permanently inundated, heavy, and wet soils to seasonally flooded or permanently moist lowland. This would include and 'hydric' and 'mesic' soils. Within our site, this would refer to the floor of the detention pond and the areas directly adjacent to the East and West drainages.

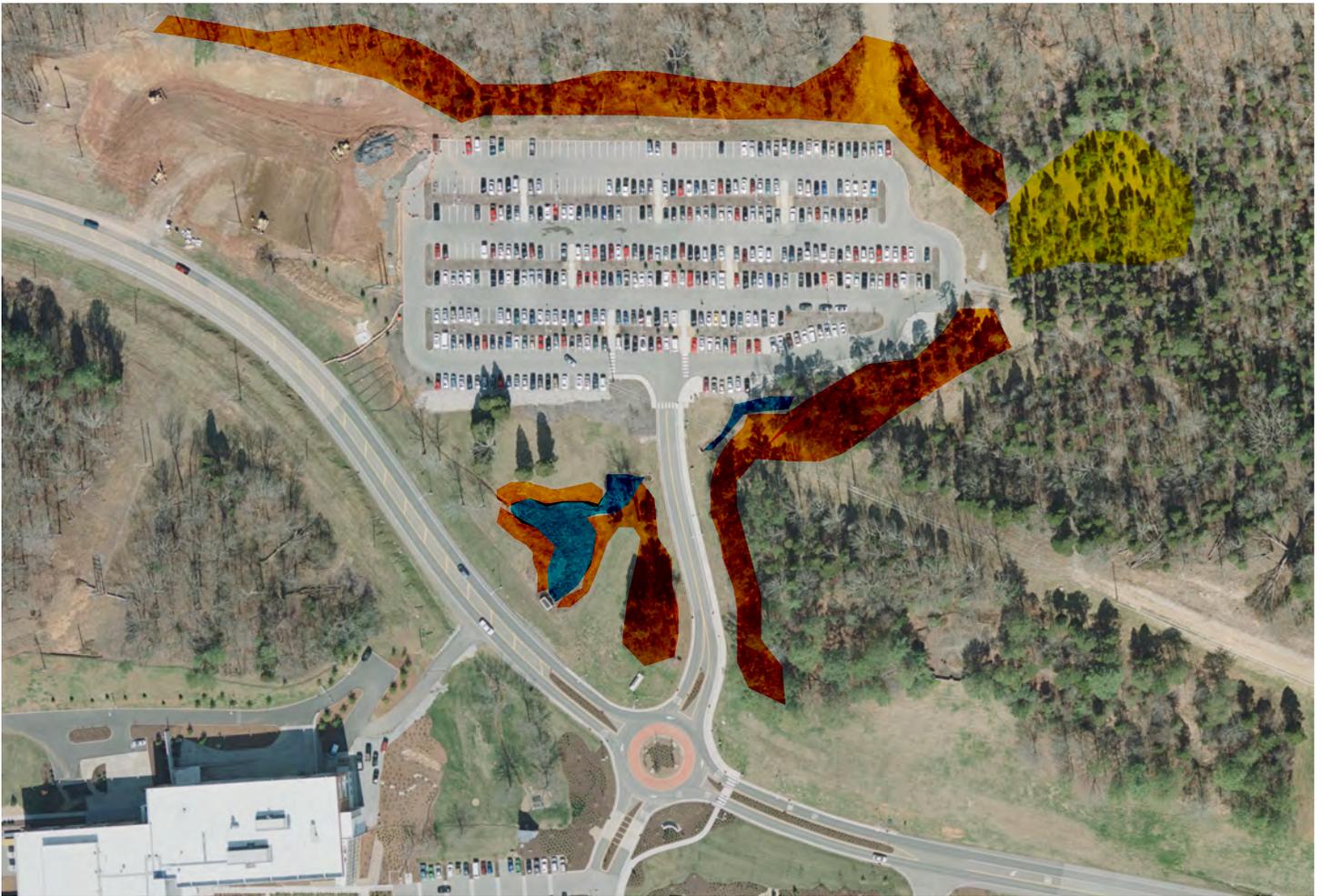
UP (Upland Slopes): Somewhat moist to somewhat dry, the matrix between 'sub-mesic' and 'sub-xeric'. Within our site, this would include the buffer plantings along the amended drainages and the banks of the pond.

DR (Droughty or Rocky): Permanently dry, sharply draining poor soils or areas of exposed rock. Within our site, this includes areas of exposed soil along top of the detention pond's banks. Even with soil amendments, these areas will be bone dry, especially during the Summer months.



VEGETATION MANAGEMENT: CONTEXTUAL CONSIDERATIONS

When considering what to plant in the storm water detention facility and adjacent drainage areas, it is useful to investigate the natural vegetation of both the planting site and adjacent areas. Species therein can be used elsewhere in the planting site, their very presence telltale of their ability to tolerate the soil and light conditions present in the site. When deciding what naturally-occurring species to use, it is important to take note of what habitat they are growing in. Plant species in the surrounding area can be classified based on the same zones illustrated above.



- BW Floor of pond, vegetated areas of adjacent drainages
- UP Early successional vegetation around pond edge, surrounding Oak-Pine forest
- DR Cedar barren area to East of parking lot

The botanical survey of the aforementioned zones focuses on both the dominant vegetation patterns and the planting potential of various species encountered. Unusual or interesting plants are also noted, as well as exotic invasive species. A special color, assigned to the common name, corresponds to the specific attribute. A footnote is included wherever an explanation is deemed necessary. **RED** corresponds to dominant vegetation, where a single species accounts for more than 5% of the cover in the habitat zone. **PURPLE** corresponds to those species found that are good choices for planting, for reasons of vigor, aesthetic value, or availability. **ORANGE** corresponds to exotic invasive species in need of removal.

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Acer rubrum</i>	Red Maple	tree	UP/Pine-Oak forest
<i>Acer saccharinum</i>	Sugar Maple	tree	UP/Pine-Oak forest
<i>Andropogon virginicus</i>	Broomsedge	grass	UP/banks of pond
*this species is rapidly colonizing the banks of the pond, but serves an important role in holding soil is recently disturbed or exposed areas. allow to grow until area is ready to plant, then remove where appropriate.			
<i>Anemone virginiana</i>	Thimbleweed	forb	BW/East Drainage



*photos show leaf and seedhead of Thimbleweed. Flowers white in the late Spring.

<i>Apocynum cannabinum</i>	Dogbane	forb	UP/banks of pond
<i>Asclepias incarnata</i>	Swamp Milkweed	forb	BW/floor of pond



*photos show growth habit and leaves of Swamp Milkweed. Showy pink flowers in late Summer.

<i>Asimina triloba</i>	Pawpaw	shrub/tree	UP/BW/Oak-Pine Forest
<i>Bignonia capreolata</i>	Crossvine	vine	UP/Oak-Pine Forest
<i>Campsis radicans</i>	Trumpetcreeper	vine	UP/BW/Oak-Pine Forest
<i>Carex spp.</i>	Sedge	sedge	BW/floor of pond
<i>Cercis canadensis</i>	Eastern Redbud	tree	UP/banks of pond and Oak-Pine Forest



*photo shows leaf of Eastern Redbud. Showy pink flowers in early Spring.

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Ceanothus americanus</i>	Ney Jersey Tea	shrub	UP/edge of Oak-Pine forest
<i>Chamaecrista fasciculata</i>	Partridge Pea	forb	UP/cleared areas



*photos show flower and colonization habit of Partridge Pea. Growing in a plant community with Narrowleaf Mountainmint (*Pycnanthemum tenuifolium*).

<i>Clitoria mariana</i>	Butterfly Pea	vine/forb	DR/Cedar barren
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*photo shows flower of Butterfly Pea.

<i>Cladonia spp.</i>	Reindeer Moss	lichen	DR/Cedar barren
<i>Cornus amomum</i>	Silky Dogwood	shrub	BW/East Drainage



*photos show leaf and berry of Silky Dogwood. Showy white flower clusters in early Summer. Berry is an important food source for wildlife.

<i>Cornus florida</i>	Flowering Dogwood	tree	UP/DR/Oak-Pine forest and Cedar barren
<i>Diospyros virginiana</i>	Persimmon	tree	UP/DR/Oak-Pine forest and Cedar barren

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Dicanthelium clandestinum</i>	Deertongue	grass	BW/Eastern Drainage



*photo shows foliage habit of Deertongue

<i>Elaeagnus pungens</i>	Thorny Olive	shrub	BW/floor of pond, East Drainage
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*photos show form and foliage characteristics of Thorny Olive. This plant should be removed promptly when located, using a cut and paint method.

<i>Euonymus fortunei</i>	Wintercreeper	vine	UP/Oak-Pine forest
<i>Eupatoriadelphus fistulosus</i>	Trumpetflower	forb	BW/East Drainage



*photos show form, foliage habit, and flower cluster of Trumpetflower (JoePyeWeed).

<i>Eupatorium serotinum</i>	Late Thoroughwort	forb	UP/banks of pond
<i>Fagus grandifolia</i>	American Beech	tree	BW/East Drainage
<i>Fragaria virginiana</i>	Virginia Strawberry	forb	UP/Oak-Pine forest

BOTANICAL NAME*Frangula caroliniana***COMMON NAME**

Carolina Buckthorn

FORM

tree

ZONE/LOCATION

UP/banks of pond, Oak-Pine forest

*photo shows foliage habit of Carolina Buckthorn.

*Fraxinus americana**Fraxinus pennsylvanica**Hibiscus moscheutos*

White Ash

Green Ash

Swamp Rose Mallow

tree

tree

shrub

UP/Oak-Pine forest

BW/floor and banks of pond

BW/floor of pond



*photos show form, emerging flower, and seed pod of Swamp Rose Mallow.

*Hypericum hypericoides**Juglans nigra**Juncus effusus**Juniperus virginiana*

St. Andrew's Cross

Black Walnut

Soft Rush

Eastern Redcedar

shrub

tree

rush

tree

DR/Cedar barren

BW/East Drainage

BW/floor of pond

Throughout



*photos show form of Eastern Redcedar and vegetation pattern of Cedar Barren.

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Lespedeza cuneata</i>	Chinese Lespedeza	forb	UP/cleared areas
<i>Ligustrum sinense</i>	Chinese Privet	shrub	BW/East Drainage
<i>Liquidambar styraciflua</i>	Sweetgum	tree	UP/BW/East Drainage and Pine-Oak forest
<i>Liriodendron tulipifera</i>	Tulip Poplar	tree	UP/BW/banks of pond, East Drainage, and Pine-Oak forest
<i>Lobelia inflata</i>	Indian Tobacco	forb	DR/Cedar barren
<i>Lonicera japonica</i>	Japanese Honeysuckle	vine	UP/BW/banks of pond, East Drainage, and Pine-Oak forest



*photo shows foliage and flower of Japanese Honeysuckle.

Ludwigia alternifolia **Seedbox** forb BW/floor of pond



*photos show flower and foliage character of Seedbox.

Lycopus americanus **American Water Horehound** forb BW/floor of pond



*photo shows flower and foliage character of American Water Horehound.

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Mimulus ringens</i>	Allegheny Monkeyflower	forb	BW/floor of pond



* photo shows flower and foliage habit of Monkeyflower.



* photo shows Monkeyflower growing amongst Soft Rush and Ironweed.

<i>Morus rubra</i>	Red Mulberry	tree	UP/BW/East Drainage and Pine-Oak forest
<i>Nyssa sylvatica</i>	Blackgum	tree	UP/Pine-Oak forest
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	vine	UP/banks of pond
<i>Photinia pyrifolia</i>	Red Chokeberry	tree	BW/East Drainage



* photos show foliage habit and undeveloped berries of Red Chokeberry. Showy white flower clusters in late Spring.

<i>Pinus echinata</i>	Shortleaf Pine	tree	UP/Pine-Oak forest
<i>Pinus taeda</i>	Loblolly Pine	forb	UP/planted
<i>Pinus virginiana</i>	Virginia Pine	tree	UP/Pine-Oak forest

BOTANICAL NAME

Platanus occidentalis

COMMON NAME

Sycamore

FORM

tree

ZONE/LOCATION

BW/floor of pond, adjacent lawn area, and East Drainage.

Populus deltoides

Eastern Cottonwood

tree

BW/foot of pond bank



* photos show form and foliage habit of Eastern Cottonwood.

Prunus serotina

Black Cherry

tree

UP/BW/East Drainage and Pine-Oak forest

Pycnanthemum incanum

Hoary Mountainmint

forb

UP/edge of Pine-Oak forest



* photos show flower and form of Hoary Mountainmint.

Pycnanthemum tenuifolium

Narrowleaf Mountainmint

forb

UP/DR/cleared areas and Cedar barren.



* photo shows flower and foliage character of Narrowleaf Mountainmint.

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Quercus alba</i>	White Oak	tree	DR/UP/BW/Cedar barren, Pine-Oak forest, and East Drainage
<i>Quercus coccinea</i>	Scarlet Oak	tree	UP/Pine-Oak forest
<i>Quercus falcata</i>	Southern Red Oak	tree	UP/Pine-Oak forest
<i>Quercus marilandica</i>	Blackjack Oak	tree	UP/Pine-Oak forest
<i>Quercus montana</i>	Chestnut Oak	tree	DR/UP Cedar barren and Pine-Oak forest
<i>Quercus phellos</i>	Willow Oak	tree	UP/BW Pine-Oak forest and East Drainage
<i>Quercus stellata</i>	Post Oak	tree	UP/Pine-Oak forest
<i>Quercus velutina</i>	Black Oak	tree	UP/Pine-Oak forest
<i>Rhexia virginica</i>	Virginia Meadowbeauty	forb	DR/Cedar barren



* photo shows flower of Virginia Meadowbeauty.

<i>Rhus aromatica</i>	Fragrant Sumac	shrub	DR/Cedar barren
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* photo shows foliage of Fragrant Sumac. Cultivar "Gro-Low" is a popular groundcover, excellent for very dry areas and poor soils (i.e. exposed soil on pond banks)

<i>Rhus copallinum</i>	Shining Sumac	shrub/tree	UP/banks of pond and edge of Pine-Oak forest
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* photos show form and foliage characteristics of Shining Sumac.

BOTANICAL NAME

Rhus glabra



COMMON NAME

Smooth Sumac

FORM

shrub/tree

ZONE/LOCATION

UP/banks of pond and edge of Pine-Oak forest

*photo shows form and foliage characteristics of Shining Sumac.

Rosa carolina



Carolina Rose

shrub

BW/East Drainage

*photo shows foliage habit of Carolina Rose.

Rudbeckia hirta



Black-eyed Susan

forb

UP/cleared areas

*photo shows flower of Black-eyed Susan. A similar species, *Rudbeckia fulgida*, is more suited for planting.

Ruellia spp.



Wild Petunia

forb

BW/East Drainage

*photo shows foliage habit and bracts of Wild Petunia.

Salix nigra

Black Willow

tree

BW/floor of pond and East Drainage

Salvia lyrata

Lyreleaf Sage

tree

UP/cleared areas

Schedonorus phoenix

Tall Fescue

grass

Throughout

Sorghum halapense

Johnsongrass

grass

Throughout

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Solidago</i> spp.	Goldenrod	forb	UP/banks of pond and edge of Pine-Oak forest



*photo shows foliage habit of Goldenrod. Blooms gold late Summer until frost, for most species.

<i>Symphyotrichum laevis</i>	Smooth Aster	forb	UP/banks of pond
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*photos show flowers and foliage habit and bracts of Smooth Aster.

<i>Toxicodendron radicans</i>	Poison Ivy	vine	Throughout
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*photo shows foliage habit of Poison Ivy.

<i>Typha latifolia</i>	Cattail	forb	BW/floor of pond and East Drainage
<i>Ulmus alata</i>	Winged Elm	tree	UP/Pine-Oak forest
<i>Ulmus americana</i>	American Elm	tree	BW/East Drainage

BOTANICAL NAME	COMMON NAME	FORM	ZONE/LOCATION
<i>Vernonia altissima</i>	Tall Ironweed	forb	BW/UP/ floor and banks of pond and East Drainage



* photos show individual flowers, inflorescences, foliage, and growth habit of Tall Ironweed.

<i>Vitis</i> spp.	Wild Grape	vine	Throughout
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VEGETATION MANAGEMENT: PLANTING OPTIONS

The following is a list of recommended plantings for the storm water retention facility and surrounding areas. Species were selected based on nativity, adaptation to site characteristics, ecological value/benefit, and aesthetic features. The list is divided by planting zones: BW, UP, and DR, corresponding to the map on page 10. **RED**, when assigned to the common name, denotes a species that was occurring naturally on-site.

BW (BOTTOMLAND/WETLAND)

BOTANICAL NAME	COMMON NAME	FORM
<i>Alisma subcordata</i>	Water Plantain	forb
<i>Alnus serrulata</i>	Hazel Alder	shrub/tree
<i>Amorpha fruticosa</i>	Indigobush	shrub
<i>Andropogon glomeratus</i>	Wooly Broomsedge	grass
<i>Anemone virginiana</i>	Thimbleweed	forb
<i>Asclepias incarnata</i>	Swamp Milkweed	forb
<i>Betula nigra</i>	River Birch	tree
<i>Carex cherokeensis</i>	Cherokee Sedge	sedge
<i>Cephalanthus occidentalis</i>	Buttonbush	shrub
<i>Chasmanthium latifolium</i>	River Oats	grass
<i>Chelone glabra</i>	White Turtlehead	forb
<i>Conoclinium coelestinum</i>	Mistflower	forb
<i>Cornus amomum</i>	Silky Dogwood	shrub
<i>Eleocharis spp.</i>	Spikerush	rush
<i>Equisetum hymale</i>	Scouring Rush	horsetail
<i>Eupatoriadelphus fistulosus</i>	Trumpetflower	forb
<i>Helenium autumnale</i>	Autumn Sneezeweed	forb
<i>Helianthus angustifolius</i>	Swamp Sunflower	forb
<i>Hibiscus moscheutos</i>	Swamp Rose Mallow	shrub
<i>Hypericum densiflorum</i>	Shrub St. Johnswort	shrub
<i>Iris virginica</i>	Virginia Blue Flag	forb
<i>Itea virginica</i>	Virginia Sweetspire	shrub
<i>Juncus effusus</i>	Soft Rush	rush
<i>Liquidambar styraciflua</i>	Sweetgum	tree
<i>Lobelia cardinalis</i>	Cardinalflower	forb
<i>Lobelia siphilitica</i>	Great Blue Lobelia	forb
<i>Magnolia virginiana</i>	Sweetbay Magnolia	tree
<i>Photinia pyrifolia</i>	Red Chokeberry	shrub
<i>Physostegia virginiana</i>	Obedient Plant	forb
<i>Pontederia cordata</i>	Pickerelweed	forb
<i>Quercus phellos</i>	Willow Oak	tree
<i>Quercus shumardii</i>	Shumard Oak	tree
<i>Rosa palustris</i>	Swamp Rose	shrub
<i>Rudbeckia lacinata</i>	Cutleaf Coneflower	forb
<i>Saccharum giganteum</i>	Sugarcane Plumegrass	grass
<i>Sambucus canadensis</i>	Elderberry	shrub
<i>Saururus cernuus</i>	Lizard's-Tail	forb
<i>Tripsacum dactyloides</i>	Eastern Gamagrass	grass
<i>Veronicastrum virginicus</i>	Culver's Root	forb
<i>Vernonia altissima</i>	Tall Ironweed	forb

UP (UPLAND SLOPES)

BOTANICAL NAME	COMMON NAME	FORM
<i>Acer rubrum</i>	Red Maple	tree
<i>Asclepias tuberosa</i>	Butterflyweed	forb
<i>Aralia spinosa</i>	Devil's Walkingstick	tree
<i>Baptisia australis</i>	Blue Wild Indigo	forb
<i>Callicarpa americana</i>	American Beautyberry	shrub
<i>Ceanothus americanus</i>	New Jersey Tea	shrub
<i>Cercis canadensis</i>	Eastern Redbud	tree
<i>Chamaecrista fasciculata</i>	Partidge Pea	forb
<i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	forb
<i>Cornus florida</i>	Flowering Dogwood	tree
<i>Echinacea purpurea</i>	Purple Coneflower	forb
<i>Eryngium yuccifolium</i>	Rattlesnake Master	forb
<i>Frangula caroliniana</i>	Carolina Buckthorn	tree
<i>Helianthus maximilianii</i>	Maximilian Sunflower	forb
<i>Juniperus virginiana</i>	Eastern Redcedar	tree
<i>Liatris spicata</i>	Blazingstar	rush
<i>Liatris squarrosa</i>	Scaly Blazingstar	forb
<i>Monarda fistulosa</i>	Wild Bergamot	forb
<i>Muhlenbergia capillaris</i>	Pink Muhly Grass	grass
<i>Nyssa sylvatica</i>	Blackgum	tree
<i>Oenothera tetragona</i>	Sundrops	forb
<i>Panicum virgatum</i>	Switchgrass (cultivar)	grass
<i>Penstemon laevigatus</i>	Penstemon	forb
<i>Pycnanthemum incanum</i>	Hoary Mountainmint	forb
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	forb
<i>Ratibida pinnata</i>	Prairie Coneflower	forb
<i>Rhus copallinum</i>	Shining Sumac	shrub/tree
<i>Rudbeckia fulgida</i>	Orange Coneflower	forb
<i>Sabatia angularis</i>	Rose-pink	forb
<i>Schizachyrium scoparium</i>	Little Bluestem (cultivar)	grass
<i>Sporobolus heterolepis</i>	Prairie Dropseed	grass
<i>Symphoricarpos orbiculatus</i>	Coralberry	shrub
<i>Symphotrichum laevis</i>	Smooth Aster	forb

DR (DROUGHTY or ROCKY)

BOTANICAL NAME	COMMON NAME	FORM
<i>Asclepias tuberosa</i>	Butterflyweed	forb
<i>Cercis canadensis</i>	Eastern Redbud	tree
<i>Hypericum frondosum</i>	Golden St. Johnswort	shrub
<i>Hypericum hypericoides</i>	St. Andrew's Cross	shrub
<i>Juniperus virginiana</i>	Eastern Redcedar	tree
<i>Liatris spicata</i>	Blazingstar	rush
<i>Manfreda virginica</i>	Virginia False-aloe	forb
<i>Opuntia humifusa</i>	Prickly Pear	forb
<i>Ratibida pinnata</i>	Prairie Coneflower	forb
<i>Rhus aromatica</i>	Fragrant Sumac	shrub
<i>Schizachyrium scoparium</i>	Little Bluestem (cultivar)	grass
<i>Sporobolus heterolepis</i>	Prairie Dropseed	grass
<i>Symphotrichum oblongifolius</i>	Aromatic Aster	forb