Unify the Park

FOR PUBLIC COMMENT

Unify the Park
Recommendations

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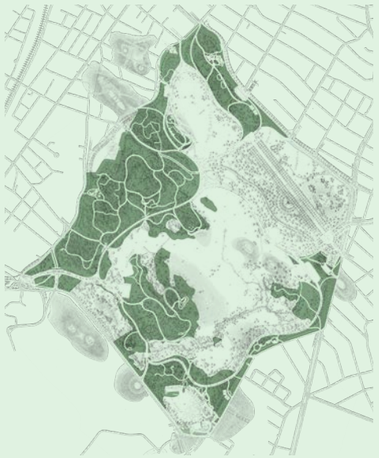
A Short History of Landscape Change

Use Impacts Character



LIVING WITH THE LAND
Circa 12,000 years ago to 1630s

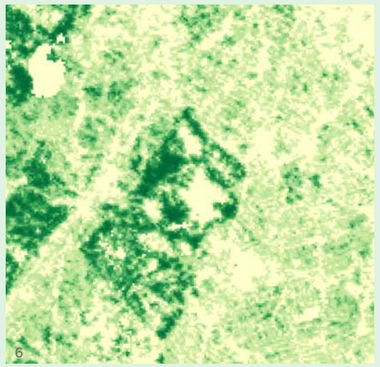
The land that is Franklin Park today first came into existence about 12,000 years ago when the last ice receded from the landscape. The resulting landscape (now known as the Boston Basin) was one of gentle forested slopes, rivers, marshes, and most notably smooth-soil covered drumlin hills, which punctuate the site of the park. Native People lived with and worked this land for thousands of years before European settlers arrived in the 1600's -- and still do today.

COLONIAL SETTLERS
1630s - 1850s

Following the creation of the Massachusetts Bay Colony in 1630, Roxbury (which includes present day West Roxbury and Jamaica Plain) was established as a rural outpost of Boston. The natural resources of the area, including arable land and timber, made it attractive to settlers. Much of the gently sloping land within what would become Franklin Park was cleared to support farming and grazing, as small farms began to dot the landscape.

THE PARK'S GENERAL PLAN
1895 - 1910

Woodlands and meadows played a character-defining role in The General Plan for Franklin Park, setting the park experience apart from the developing city and towns nearby. During the park's construction, masses of second growth woods punctuated by rocky ledges and large boulders were supplemented by the intentional planting of new canopy and understory vegetation annually. Large open grasslands were created to host both active and passive programs, and offer long views.



CANOPY GROWTH
1910-1930

Though much of the park's tree planting was young material, the oaks, beeches, maples, pines, and hemlocks among other species matured with rapid growth, soon taking on a character similar to the woodlands that would have existed on the site pre-settlement. New program introduced in the park's open meadows, most notable being the golf course in the center, altered the overall experience of the park's landscape.

NATURAL SYSTEMS IN DECLINE
1930 - 2022

As City priorities and neighborhood demographics shifted, investment in Franklin Park declined dramatically. Insufficient budget allocations for the maintenance of the park, including systematic tree care and next-generation planting was neglected, resulting in large single-aged woodlands crowded with a largely invasive understory. More recently, the Emerald Necklace Conservancy has begun to support the park's canopy through increased pruning and new canopy tree planting.

LIVING INFRASTRUCTURE
Looking Forward

The park's woodlands play a more critical role in the Boston landscape than ever before in the face of habitat loss and climate change. They lower temperatures, clean air and water, provide critical habitat, and contribute to our mental and physical health. A concerted effort and investment is needed to improve the health of the urban canopy to sustain this resource long into the future for generations to come.

What We Heard
Balance Ecology & Experience

COMMUNITY NEEDS & WISHES

"Restoring and maintaining the natural features of the park - trees, plants, habitats for birds, is top priority."

"I think more needs to be done, or prioritized, to improve the ecological health of the park. This is the most pressing issue for our city at this moment in history."

"What is most wonderful about Franklin Park is that much of it is wild and relatively untouched. Don't ruin that. Boston has plenty of lovely sculpted gardens that entice the masses. It has only one Franklin Park...It's the only place in Boston of this size and kind."

"Nature in this park has been long neglected. If you did nothing more than care for trees, shrubs, get rid of invasives, and create native plant habitats, I would be thrilled."

"I think that care for the flora across the park is important, but also important is keeping the wild aspect of some of the woodlands, since that brings a rare bit of wild nature into the city!"

"Please do remove invasive species from the woodlands, but care should be taken to preserve the 'wild' and adventurous spirit of the network of informal trails and footpaths in this area. Do not manicure or formalize this magical space!"

"Plant more trees that are native to the area. Please increase flowers for bee and butterfly populations."

"The park is a place to be in nature and enhance the ecological value - make sure that continues to be central to the plan."

"Increasing biodiversity throughout the park and protecting existing ecology should be prioritized in all its forms."

"I hope for us to maintain a healthy environment in absorbing the beauty and love nature provides, not only for us, but for future generations to come."

VALUES & GOALS

PARK CHARACTER → **Preserve the park's natural character & enhance its beauty and seasonal display.**

HABITAT & NATURAL SYSTEMS → **Implement park-wide strategies to make ecological improvements including habitat, stormwater management, and biodiversity.**

PUBLIC HEALTH → **Protect the park's ecological infrastructure so that it may serve its neighbors for decades to come.**

ECOLOGICAL MANAGEMENT → **Use innovative management and maintenance strategies that increase the standard level of care for the park's many landscape types.**

CLIMATE CHANGE → **Promote resilient and self-sustaining park ecologies.**

RECOMMENDATIONS:

REGENERATE THE WOODLANDS

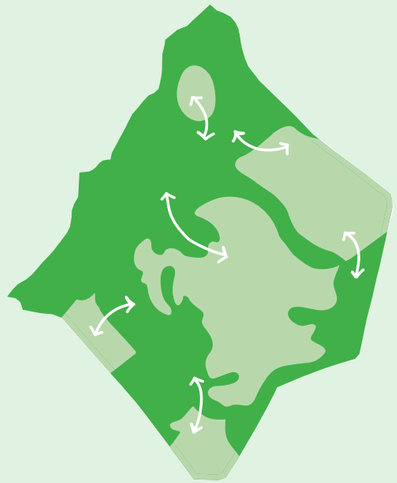
PRESERVE HERITAGE & LEGACY TREES

INTRODUCE BUFFERS & REDESIGN LAWNS TO INCREASE DURABILITY & DIVERSITY

REDIRECT, COLLECT, & CLEAN STORMWATER TO STRENGTHEN WATER SYSTEMS & IMPROVE DRAINAGE

The Big Picture
Recognize the Resource

The park's size alone – 500+ acres – makes it a unique ecological resource within the city. At the center of a diverse set of neighborhoods, it is also a critical public health resource. The city must make a significant commitment to return the park's habitats to health. It must also create strong partnerships with in-park stakeholders to promote a high standard of natural resource management and with community members to offer more opportunities for education and park stewardship .

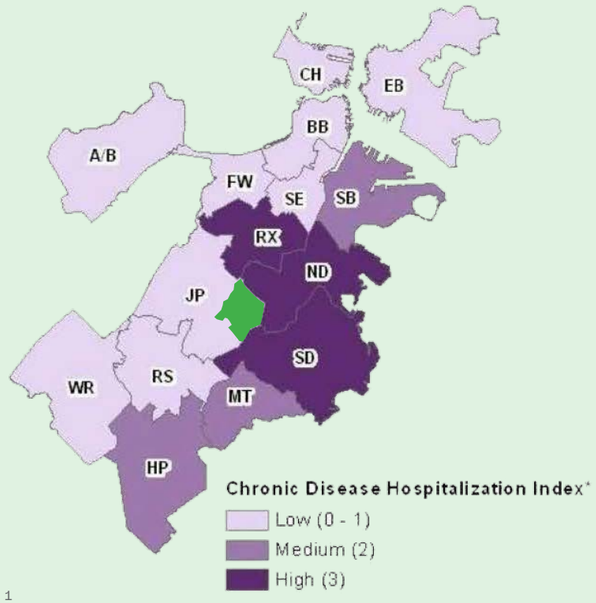


Unifying the Approach to Management

The park's ecological resources are essential to its longevity and resilience. While many stakeholders have a footprint in the park today, management strategies must work across boundaries to unify disparate governance to achieve mutually beneficial results with the whole park in mind.

Protecting Public Health Infrastructure

The impact of our environment is felt in our own health and comfort. Many of the park's surrounding communities suffer from increased rates of chronic illness, generational trauma and grief, and the effects of over-crowded housing. In addition to the park serving as an important place to escape, build relationships, and foster a sense of community and belonging, studies have shown that human contact with nature improves health outcomes, including reduced stress, better sleep, reduced depression and anxiety, lower blood pressure, and reduced diabetes and mortality.



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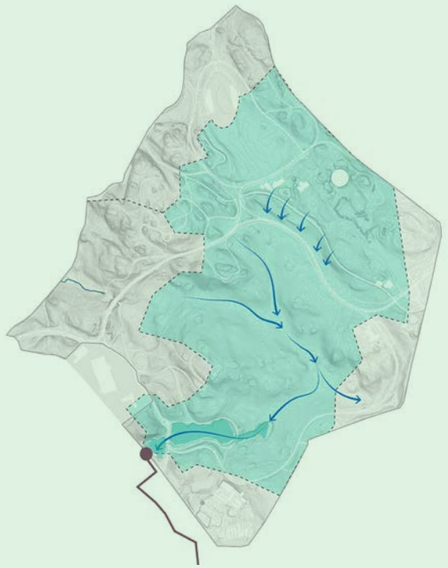
Proposed Ecological Types

- Woodland Opening
- Oak Pine Savanna Summit
- Oak Hickory Woodland Slope
- Beech Forest
- Mixed Forest Edge
- Wet Woodland
- Athletic Field or Lawn
- Dry Meadow Buffer
- Dry Meadow & Links
- New Wet Meadow
- Existing Wet Meadow
- Scarboro Pond Edge & Marsh
- Open Water

Managing & Extending Habitat

The park is comprised of over ten distinct ecological zones, but many, especially its woodlands, are in decline. Restoring robust ecologies has the potential to increase resilience in the face of climate change, increase wildlife habitat, and stabilize an invaluable public health resource for its neighbors.



Capturing & Directing Water

An aging drainage system leaves many of the park's high-traffic areas unusable during rain events. Runoff carrying debris and pollutants discharges directly into the pond or the city's drainage system, impacting both water quality and flooding downstream. The park's significant acreage offers opportunities to manage and infiltrate the park's own stormwater.

Olmsted's Toolkit
Structuring Experience

At the root of Olmsted's design philosophy was the belief that open space could positively impact a community's mental and physical health. Using planting, among other design strategies, he elevated the site's characteristics to enhance experience. Because many of the final planting decisions were made on site in collaboration with Olmsted's assistant landscape gardner, WIlliam Fischer, there are few records documenting the planting design. However, some key principles are evident. Canopy trees were arranged in multiple ways (as dense woodlands, open groves, and ordered allées) to structure different kinds of park settings. The early park landscape also included a more pervasive understory layer that added visual and spatial interest, and a diversity of planted character and habitat that is lacking today. Critical to the overall experience of Franklin Park was its large scale. The 500+ acres allowed him to design drastically different landscapes, from immersive woodlands to expansive open meadows.

UNDERSTORY | A LOST LAYER

Understory Trees & Shrubs

This layer of planting was typically ornamental, herbaceous and often had a flowering component. Large drifts of understory plants added both seasonal interest and a more intimate sense of enclosure, and further evoked the New England landscape character.


1


2


3

CANOPY | PARK FRAMEWORK ELEMENTS

Specimen Tree in Open Area

Standalone specimen trees were planted for the enjoyment of their beauty and unique character throughout the park. Their presence also brings shade and scale to vast open spaces.


4

Groupings & Groves

Groups of multiple trees framed open views across the park's rolling meadow. They also helped to differentiate foreground from background, giving a sense of scale to these large open areas.


5

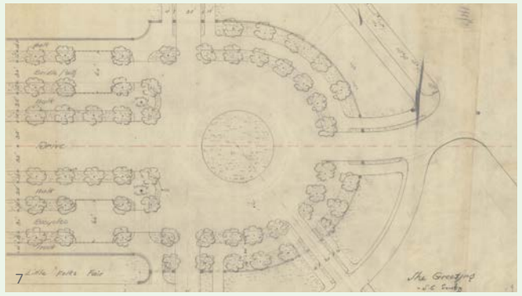
Woodlands

Much of the woodlands were purposefully planted, though their arrangement is more natural and included an understory layer. They provided contrast and backdrop to the central open meadow and created an immersive and shaded separation between the park and the city.


6

Lines & Allée

More purposeful planting of canopy allées edge significant promenades, separating modes of travel, and providing both important shade and a sense of order and formality.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Renew the Resource
Regenerate the Woodlands

Established woodlands have a major presence in the mosaic of park's ecosystems, covering about half of the overall footprint. If not carefully calibrated, programmatic uses can negatively impact these significant habitats. Innovative management and restoration strategies must be employed to balance community use and enjoyment with the long-term health and resilience of the ecosystem.

KEY CHALLENGES

- **Climate Change & Adaptation**
- **Pests & Disease**
- **Invasive Species**
- **Single-Age Canopy & Lack of Species Diversity**

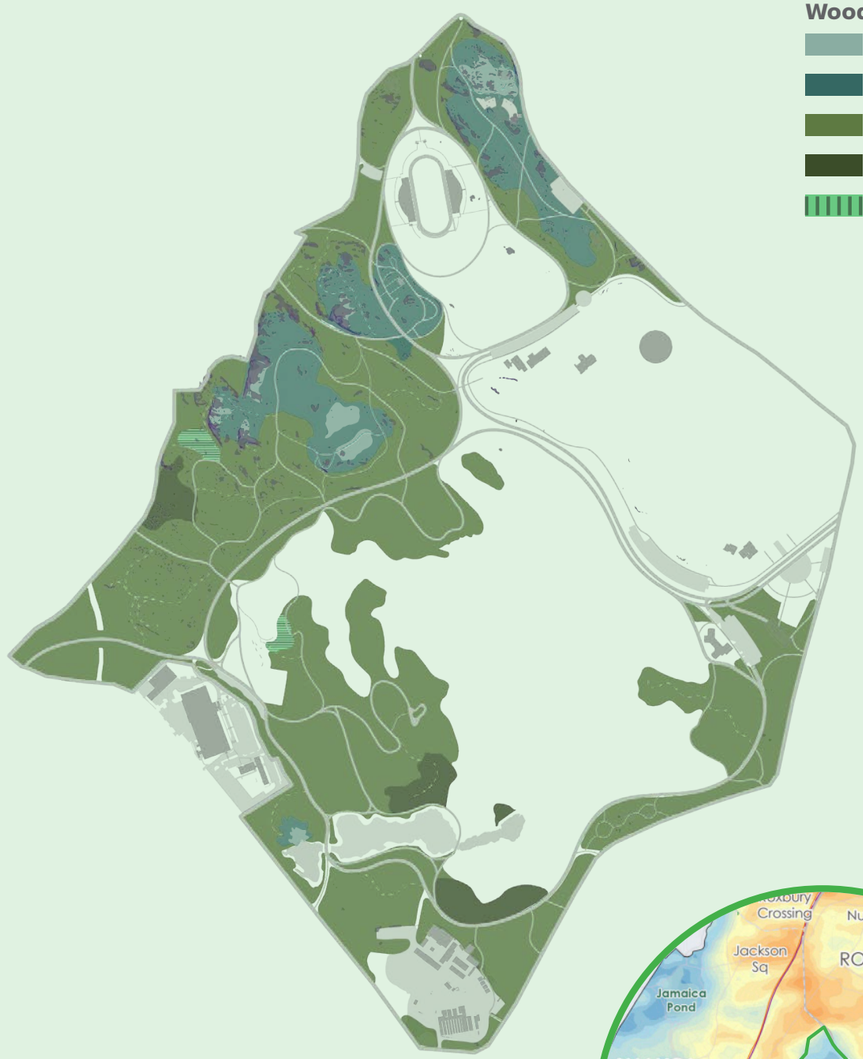
RESTORATION & MANAGEMENT RECOMMENDATIONS

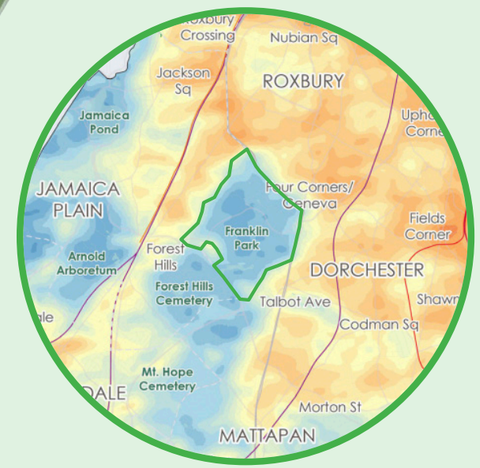
- **Target Key Pests & Diseases to Protect Tree Species at Risk**
- **Remove Invasive Species to Kick-Start Natural Regeneration**
- **Reconnect Woodland Cores to Improve Valuable Habitat**
- **Reforest Decommissioned Trails to Increase Diversity**
- **Plant Along Circulation to Enhance Experience & Habitat**

Forest opening

Oak Pine Savanna Summit

Japanese knotweed, an invasive plant





Cooling Effects of the Urban Canopy

Due to it's hundreds of acres of woodlands and open space, Franklin Park, provides a cooling effect on nearby blocks, reducing temperatures by 5-7° F. As you move further out into the neighborhood, places like Roxbury experience elevated temperatures. Woodlands also serve as an important shaded escape from neighborhoods that lack sufficient canopy cover, like those to the east. [4]

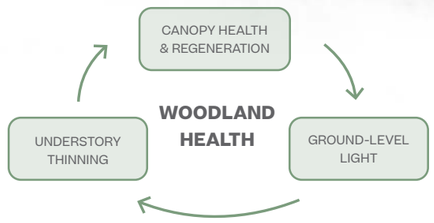
Indigo Blunting

Ecosystem Health

Monitor habitat for the presence of indicator species, which can signal a change in the biological condition and health of a particular ecosystem.

Protect the Resource

Controlling circulation through ecologically sensitive areas will be critical for maintaining ecosystem health. Educate the public about the impacts of going 'off path' through informative signage.



The Wilderness — Circuit Loop — Schoolmaster Hill

A Balancing Act:

How can woodlands be managed for ecological health and community use?

1 Remove Invasive Species

Address colonization of invasive shrubs and trees that are outcompeting native plants to jumpstart natural regeneration of the woodlands.

2 Thin Understory & Open Views

Selective thinning of vegetation not only allows more light to reach the ground layer of the forest, increasing natural regeneration, it also allows important viewsheds to be reclaimed, enhancing visitor experience.

3 Seed & Plant Native and Evergreen Species

Following invasive removal efforts, increase diversity for improved ecosystem health through seeding and planting native species. Increase critical year-round habitat by integrating evergreen species in new planting efforts.

4 Reconnect Woodland Cores

Join select critical areas of woodlands separated by major circulation routes by interplanting trees to fill large gaps in the canopy habitat and/or narrowing paved paths.

5 Minimize Circulation Paths

Decrease opportunities for invasive species repopulation by minimizing the number of paths and trails throughout natural areas and reforesting decommissioned trails. Keep path widths to a minimum to preserve important habitat.

6 Balance Use with Ecological Health

Concentrate heavier impact modes of movement -- like biking, running and walking -- along the new Circuit Loop. Limit program in the woodlands to 'lighter touch' activities like hiking, bird watching, and taking in park views to preserve the long-term health and resilience of these ecosystems.

Protect Tree Species at Risk

Target Key Pests & Diseases

Deferred management of pests threatens the health of vital woodlands. With increasing temperatures and global movement of plants, new and more dangerous pests are emerging yearly. Left untreated, pests and diseases can impact entire stands of important woodland habitat, leaving them in full decline. New planting strategies must account for existing pest pressures, like the hemlock woolly adelgid and the Bleeding Beech Canker and Beech Bark Disease, and anticipate new ones (like Oak Wilt, impacting Red Oaks which make up much of the park's canopy, and Beech Leaf Diseases) that may impact forest composition and adaptation over the next 100 years.

PEST & DISEASE CONTROL RECOMMENDATIONS

Assess Significant Threats

- Conduct a site-wide Insect and Disease Inventory to identify key insect and pest populations
- Engage a certified arborist to Inspect and monitor trees prone to detrimental pests annually.
- Document conditions and continue to update tree care planning documents in conjunction with the Parkwide Ecological Management Plan; prioritize strategies that align with current and future management goals and evaluate the cost/benefit of investment required to control persistent pests.

Treat Pests & Increase Defences

- Apply modern treatments, including systemic stem applications for hemlock woolly adelgid, which are a cost effective way to retain important Hemlock stands in the park's woodlands.
- Air spade, mulch with composted hardwood chips, and prevent pooling water at the base of the trunk to help Beech trees defend against Bleeding Beech Canker and Beech Bark Disease infections that thrive in water-logged areas.

Prevent Decline

- Improve growing conditions for high-risk specimens and groups of trees under environmental stress (soil compaction, drought, and salt runoff) by remediating soil, surface mulching, and spot watering.

Identify Trees for Removal

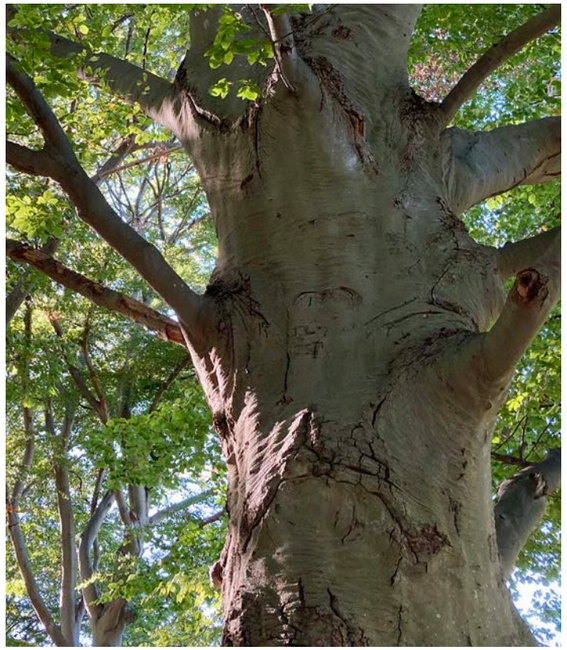
- Through the tree inventory work, specimens may be identified for removal if they are threatening or negatively impacting the health of tree communities or larger ecosystems within the park and beyond. Removal and replanting may or may not be considered depending on the context of the infected tree.

1 Hemlock woolly adelgid (HWA), an invasive aphid-like insect, are very small (1.5 mm), but are often recognizable by the white woolly masses they form on hemlock needles. They cause widespread death and decline in Hemlocks.

2

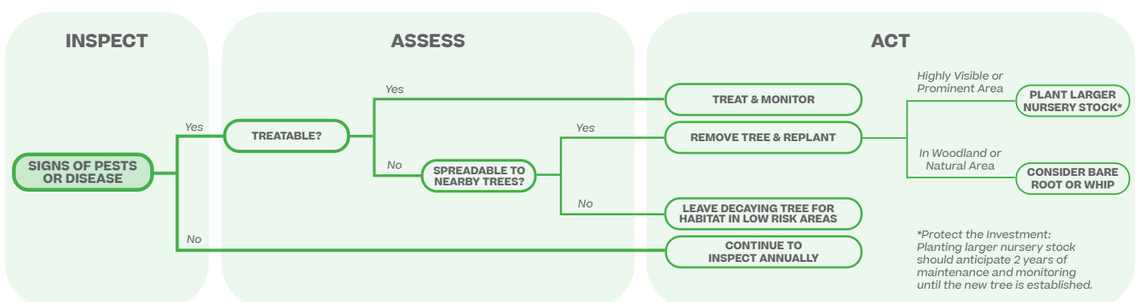
3 American Beech are susceptible to Beech Bark Disease, caused by an insect and fungus which colonize wounds. European Beech are susceptible to the Bleeding Beech Canker, caused by a fungus which attacks buttress roots and the lower trunk, causing the crown of the tree to thin and die back. It is recognizable by the "bleeding" fluid and surrounding decay. Disease prevention is the best strategy for preserving these trees.

4 Hemlocks are shade-tolerant evergreens. Protecting these trees will be critical in augmenting the evergreen habitat of the woodlands.



Some of the beech trees on-site are as old as the park. Preserving these groves will require special attention and care, as well as planting ahead to establish the next generation of this treasured community.

TREE REMOVAL DECISION MAKING PROCESS



Kick-Start Natural Regeneration

Remove Invasive Species

Invasive plants are typically introduced from other regions and usually spread quickly in their new habitat, out-competing native plants for space, nutrients, and light. In Franklin Park, years of little active management and an excessive number of trails has increased the spread of invasive plant populations. Removing these invasive plant colonies is the first step in jumpstarting natural regeneration to improve the health of the woodlands.

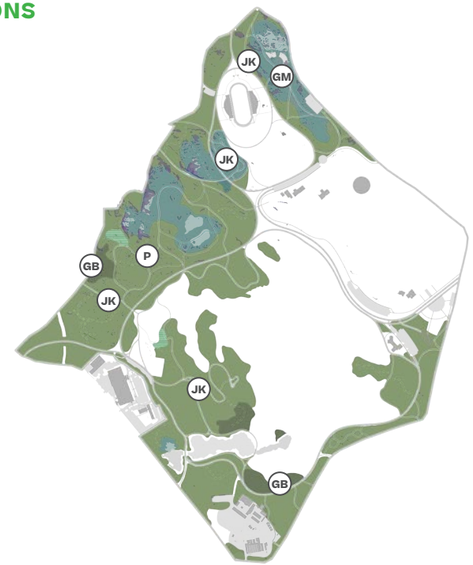
INVASIVE SPECIES MANAGEMENT RECOMMENDATIONS

Identify Priority Areas

- In order to develop a workplan and successfully execute an invasive removal process, critical areas for management must be identified, and detailed and updated records must be maintained to aid in the process.
- Decisions around funding, staffing, and other resources will be based on an assessment of urgency and the possibility of further expansion of invasive plant colonies into existing healthy stands.
- Certain conditions (like newly colonized patches within broken woodlands, or those that appear to be locally expanding and coalescing near uncolonized or high-use areas that are susceptible to human activity) facilitate an accelerated spread of invasive colonies; these areas should be understood when deciding where to begin the invasive removal effort.

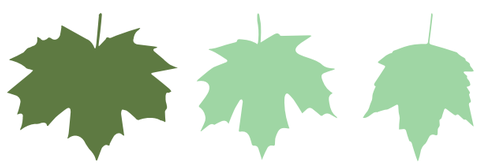
Prepare for a Long-Term Investment

- Committing to this process is a multi-year effort, with a larger up-front investment. Costs will decrease over time, but some level of monitoring and management will always be necessary to maintain a healthy woodland ecosystem.
- To make the most of time and resources, it is recommended to focus investment in one area first, slowly moving through the park, rather than a piecemeal approach.



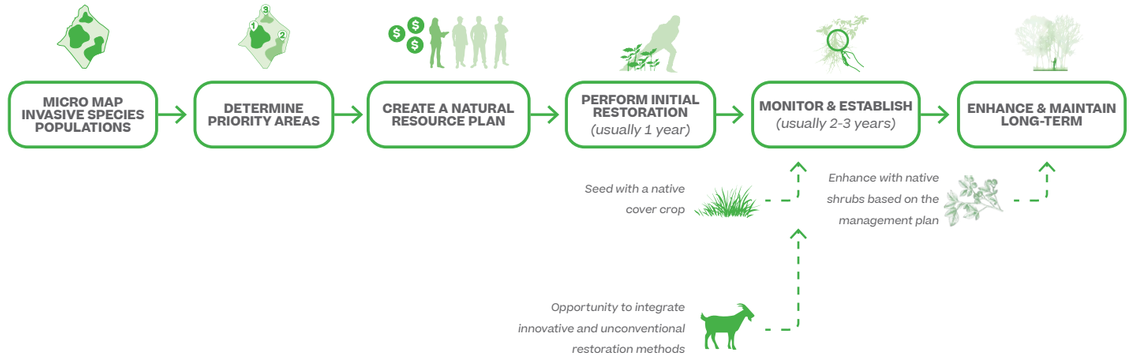
MAPLE TREE IDENTIFICATION TIPS

Norway Maples, which are invasive in woodland settings, have leaves that are usually wider than they are long with five distinct lobes. Sugar maple leaves aren't as wide and often have three distinct lobes and two much smaller lobes near the stem. Red Maples have three major lobes.



Norway Maple *(invasive)* | Sugar Maple *(native)* | Red Maple *(native)*

PROCESS TO MANAGE INVASIVE SPECIES



CRITICAL INVASIVE SPECIES IN THE PARK

A range of invasive plants exist throughout the park today. Below is a selection of the dominant species observed.

Norway Maple

A large deciduous tree that inhabits forests and forest edges; tolerant of many growing environments; produces a great deal of shade, making it difficult for other plants to grow beneath them; spreads by seed which are produced in high volumes.

Japanese Knotweed

An upright, herbaceous perennial with oval / heart-shaped leaves and bamboo-like stems; can grow to be 15' tall; thrives in disturbed areas and spreads rapidly via an extensive root system; can tolerate deep shade.

Glossy Buckthorn

A single or multi-stem shrub or small tree with shiny leaves; spreads by seed, which are produced in high volumes; shade tolerant but frequently invades sunny, open areas or path edges.

Garlic Mustard

A low-growing invasive herb with kidney-shaped leaves and small white flowers; found in forests and forest edges; emerges earlier in the spring than most native plants, outcompeting them for moisture and nutrients.

Periwinkle

A fast growing, creeping groundcover that forms dense mats along the forest floor, displacing native species; evergreen, with springtime blue, lavender, or white flower.

Improve Valuable Habitat

Reconnect Woodland Cores

Major roads and paths have subdivided what was once larger stands of woodlands into smaller areas, leaving insufficient space for the animals that rely on interior habitat away from people and cars. Consolidating programming and circulation to reconnect critical habitat areas, and increasing diversity of the woodlands through planting a variety of tree types and sizes will help stabilize the forest ecology and better support a healthy ecosystem.

WOODLAND HABITAT RECOMMENDATIONS

Reconnect Woodland Cores

- Join discrete areas of woodland, separated by Circuit Drive and other primary park paths (like through Scarboro Hill) by interplanting with trees to fill large gaps in the woodland canopy.

Promote Biodiversity & Sustainability

- Currently, Red Oak dominates planting in the park. Replanting strategies should aim to increase age and species diversity site-wide; species selected should be adaptive to the future forecasts of climate change to ensure longevity.
- In areas where irrigation is not possible or low-maintenance areas, like utility areas, woodland edges, and less formally used areas of the park, experiment with small, bare root whips that require a lower investment in acquisition and installation.

Look to Historic & Native Plants

- Based on the Olmsted planting lists available, there is an opportunity to incorporate trees that hold both historic significance and add to the native palette of the park landscape.
- Consider species that are not only historically appropriate, but also increase park diversity or build upon small stands of unique tree communities in the park.
- Develop data-driven methodology for evaluating the effects of climate change on significant woodland tree species. Include forward-looking management strategies that anticipate shifting composition, and evaluate actively planting species that are not currently hardy.

Canopy Tree Species

** Identifies trees included in the Olmsted plant palette*

American Beech *
Fagus grandifolia

American Holly
Ilex opaca

American Sycamore
Platanus occidentalis

Black Cherry *
Prunus serotina

Eastern Hemlock *
Tsuga canadensis

Eastern Red Cedar *
Juniperus virginiana

Pin Oak *
Quercus palustrius

Shagbark Hickory *
Carya ovata

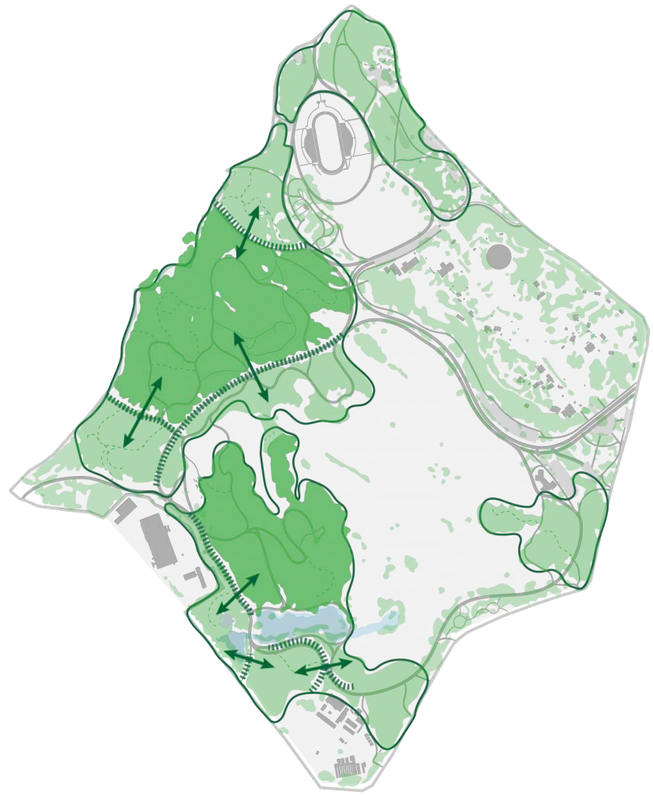
Silver Maple *
Acer saccharinum

Sweet Birch *
Betula lenta

Tupelo
Nyssa sylvatica

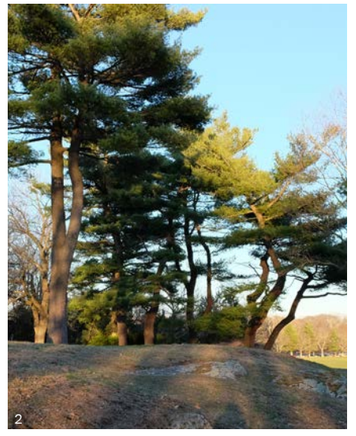
White Oak *
Quercus alba

OPPORTUNITIES TO RECONNECT HABITAT



Woodland Cores

- Core Woodland Areas
- Discrete Woodland Areas
- Opportunity to reconnect woodland canopy through interplanting



(Left to Right) Tupelo grove at the edge of Scarboro Pond, mature pines on Schoolmaster Hill, heritage Beech trees along the Circuit Loop.

Increase Diversity

Reforest Decommissioned Trails

Within the woodlands, primarily in The Wilderness, an excessive number of trails has encouraged the spread of invasive plants, leading to decreased plant diversity and the inability for tree canopy to regenerate. As part of the larger ecosystem restoration efforts, the number of trails will have to be reduced and reforestation efforts will need to follow. Reforestation strategies can bring improved diversity to the woodlands at the ground and shrub layers with low investment.

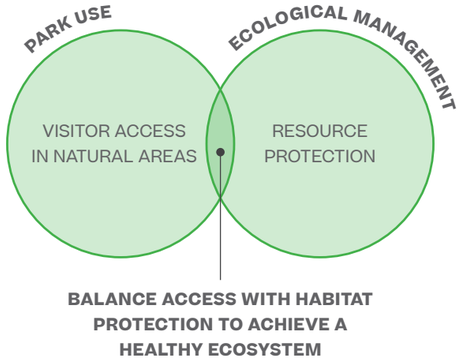
TRAIL RESTORATION RECOMMENDATIONS

Reforest Decommissioned Trails

- Decommission excessive and redundant trails in The Wilderness that facilitate the spread of invasive species.
- Reforest the old trails and slopes with a shade-tolerant forest seed mix.
- Plant shrubs and whips where decommissioned trails meet existing trails to discourage human use that can hinder reforestation efforts. Use signage to educate the public about the importance of staying on the paths in natural areas.
- Use remaining trails and roads to define management units within forested areas.

Increase Diversity with Low Investment

- To provide a food source for animals and visual interest for park visitors, include flowering and fruiting shrubs, like Wild Blueberry, in trail reforestation efforts; Include evergreen plants, like Juniper and Pine to provide valuable evergreen habitat missing in the park today.
- Protect shrub and whip planting from rodent and deer browsing during establishment.



Plant Palette Seasonal Variation

flowering and berry-producing understory trees and shrubs

** identifies trees included in the Olmsted plant palette*

Witchhazel *
Hamamelis virginiana L.

Maple-Leaved Viburnum *
Viburnum acerifolium

Black Huckleberry
Gaylussacia baccata

Lowbush Blueberry
Vaccinium angustifolium

Plants to Leave in the Past

Not all plants are suitable in today's park landscape. Plants should be selected with a critical eye and it is not recommended to incorporate plants that are considered invasive or unsuitable for this climate, including any cultivar or hybrid of any prohibited plants. These species, which were used in the past, demonstrate traits that render them undesirable for planting in the park today:

Norway maple
Acer platanoides

Bell's honeysuckle
Lonicera x bella

Barberry bush
Berberis vulgaris

European buckthorn
Frangula alnus

Burning bush
Euonymus alatus

SIMPLIFY TRAIL CIRCULATION

Wilderness Paths for Reforestation

- Proposed and existing to remain trails
- Existing trails to be removed and reforested (trails suggested for removal and reforestation are based on the historic plan trail alignment, opportunities to improve wayfinding and control the spread of invasive species; final trail system to be confirmed as part of the future ecological restoration plan)
- Woodland canopy

TRAIL REFORESTATION PROCESS

Remove & Stabilize

Remove the trail path material (paving, base, etc.), rototill the soil, and immediately seed with a native woodland cover crop to stabilize the soil and provide vegetative cover, and tamp the seed; use erosion control on slopes.

Deter Human Use

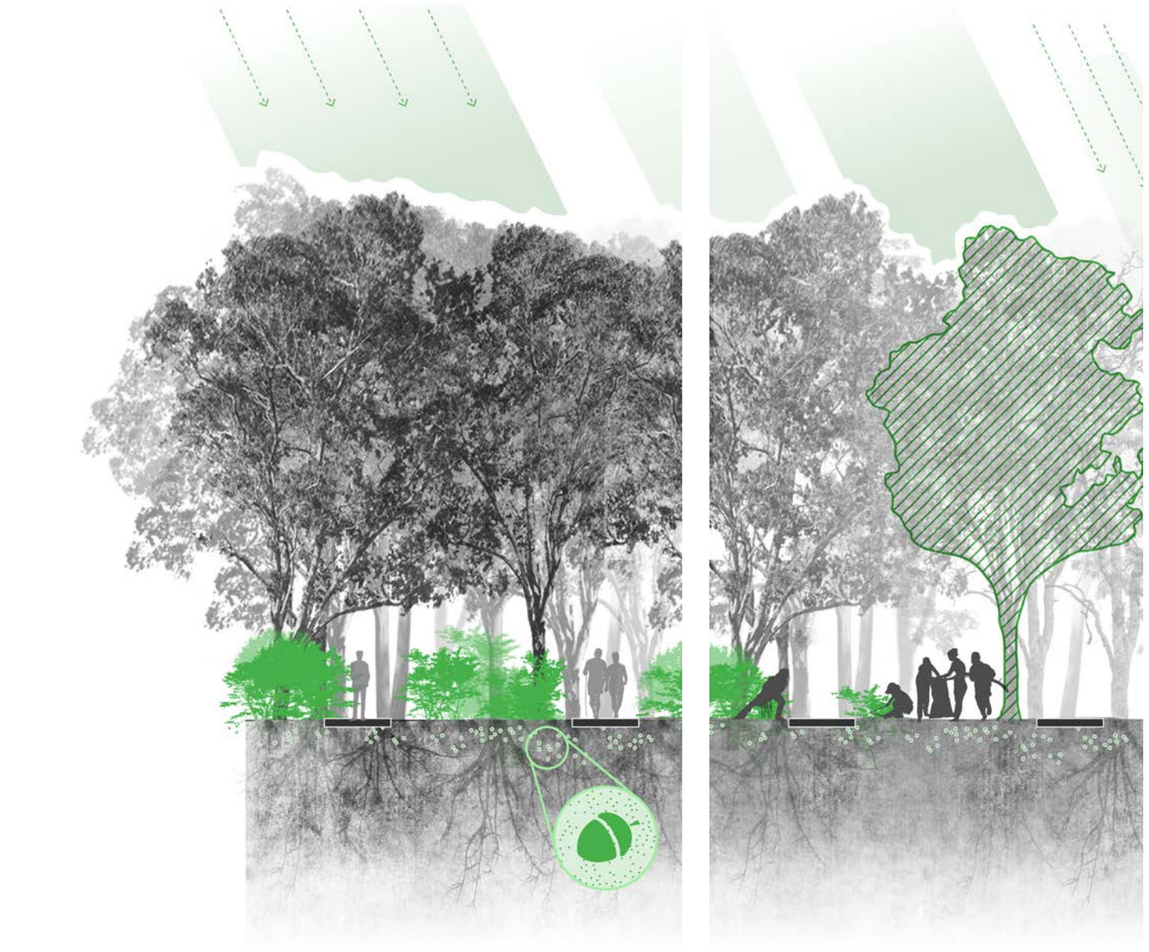
At the time of path removal and seeding, plant the ends of decommissioned trails where they meet active ones with shrubs and whips to deter human use; select flowering or berry-producing understory to increase diversity and provide a food source.

Re-established Cover

Over time, cover crops and shrubs and whips will fill in and mature in the place of previous trails and paths, blending with the established woodlands on either side.

Manage Natural Regeneration

The Life of an Acorn



Year 1

Existing Park Woodlands

When invasive shrubs and trees dominate the woodland, it decreases light levels and limits the growing conditions for other plants. The resulting ecosystem is fragile and without a reliable next generation of canopy trees able to emerge from the seedbank below the surface.

Invasive Species Removal & Understory Thinning

Increasing light levels on the woodland floor is critical to activating native seeds within the soil. Two strategies — removal of invasive species and selective tree removal — will encourage the natural regeneration of the extensive oak-hickory and beech canopy.

Green Jobs Opportunity

The new city workforce development program, Power Corp, will expand access to green jobs through paid training and hands-on work, with a focus on tree care, urban wilds maintenance, and park rangers work.

Year 2-3

Seeding & Sunlight

Bare ground, resulting from invasive removal, should be seeded with a native mix to prevent recolonization of invasive plants. As light reaches the forest floor, the seedbank of acorns laying dormant below the surface is activated and able to grow.

Year 4+

Natural Regeneration & Planting

A new generation of canopy trees emerges, creating a more resilient, mixed aged woodland ecosystem. Diversity can be supplemented by planting fruiting and flowering trees & shrubs, and continued management through thinning over time will be necessary to maintain the regenerative cycle.

Enhance Experience & Habitat
Plant Along Circulation

Planting that is distinct from the natural character of the woodlands brings further definition to the park's landscape. Using canopy trees to line primary paths brings a sense of scale, separates modes of travel, and adds to the urban forest. Understory planting can build seasonal interest. Incorporating different colors, textures, and sizes of understory trees and shrubs with sensitivity to composition, scale, and diversity will establish a multidimensional park environment, improve habitat, and provide an enriching experience for visitors throughout the year.

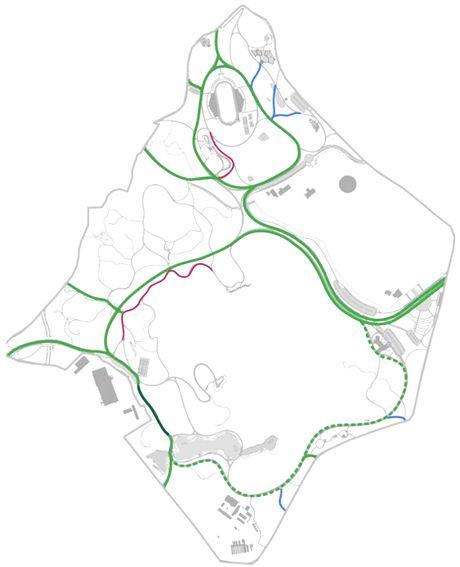
CIRCULATION PLANTING RECOMMENDATIONS

Use Canopy to Support Primary Paths

- Emphasize primary paths with canopy tree planting along their edges through the use of allées and more informal lines of trees to guide movement, create separation between modes of travel, and to provide shade for park visitors (see diagram to the right).
- Interplant existing allées and lines of trees to fill in gaps and extend the life of formal heritage tree planting in the park.
- Planting of large calliper nursery stock should be conducted as a formal effort and should be proceeded by design; quality plants and proper installation is necessary and 2 years of maintenance and monitoring should be anticipated until the new tree is established.

Add Seasonal Variation to the Landscape

- Strategically plant evergreen trees, and flowering understory trees and shrubs along popular pedestrian paths to generate visual interest and maximize their display as you move through the park; select plants that highlight the changing seasons throughout the year.
- Actively manage these zones in high use areas to prevent this ephemeral zone from succumbing to forest succession.



Allées & Tree Walks

- Existing Woodlands
- Existing Canopy Tree Lined Path
- Proposed Canopy Tree Lined Path
- Proposed Evergreen Edge
- Proposed Flowering Tree Walk
- Proposed Winter Interest Tree Walk

Flowering & Winter Interest Tree Species

** identifies trees included in the Olmsted plant palette*

Flowering Dogwood *
Cornus florida

Crabapple
Malus sp.

Cornelian Cherry
Cornus mas

Serviceberry *
Amelanchier canadensis

American Yew
Taxus canadensis

Horse Chestnut
Aesculus hippocastanum

Precedent images for canopy trees supporting park paths.

Protect Legacy
Preserve Heritage & Legacy Trees

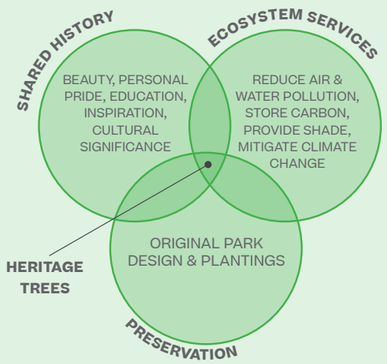
Many park visitors appreciate the beauty of mature canopy, both for their scale and the connection to previous generations they suggest. As heritage and legacy trees age or become damaged by pests, disease, or extreme weather, pruning, stabilization, and preventative measures must be taken to maintain ecological integrity, historic character, and safe conditions for visitors. Replanting efforts allow for diversification of the park's ecology, while adding species that carry historic significance.

KEY CHALLENGES

- **Aging Canopy**
- **Deferred Care & Environmental Stress**
- **Pests & Diseases**

RESTORATION & MANAGEMENT RECOMMENDATIONS

- **Set Standards for Tree Care to Manage for Long-Term Stability**




1

Red Oaks on Scarboro Hill


2

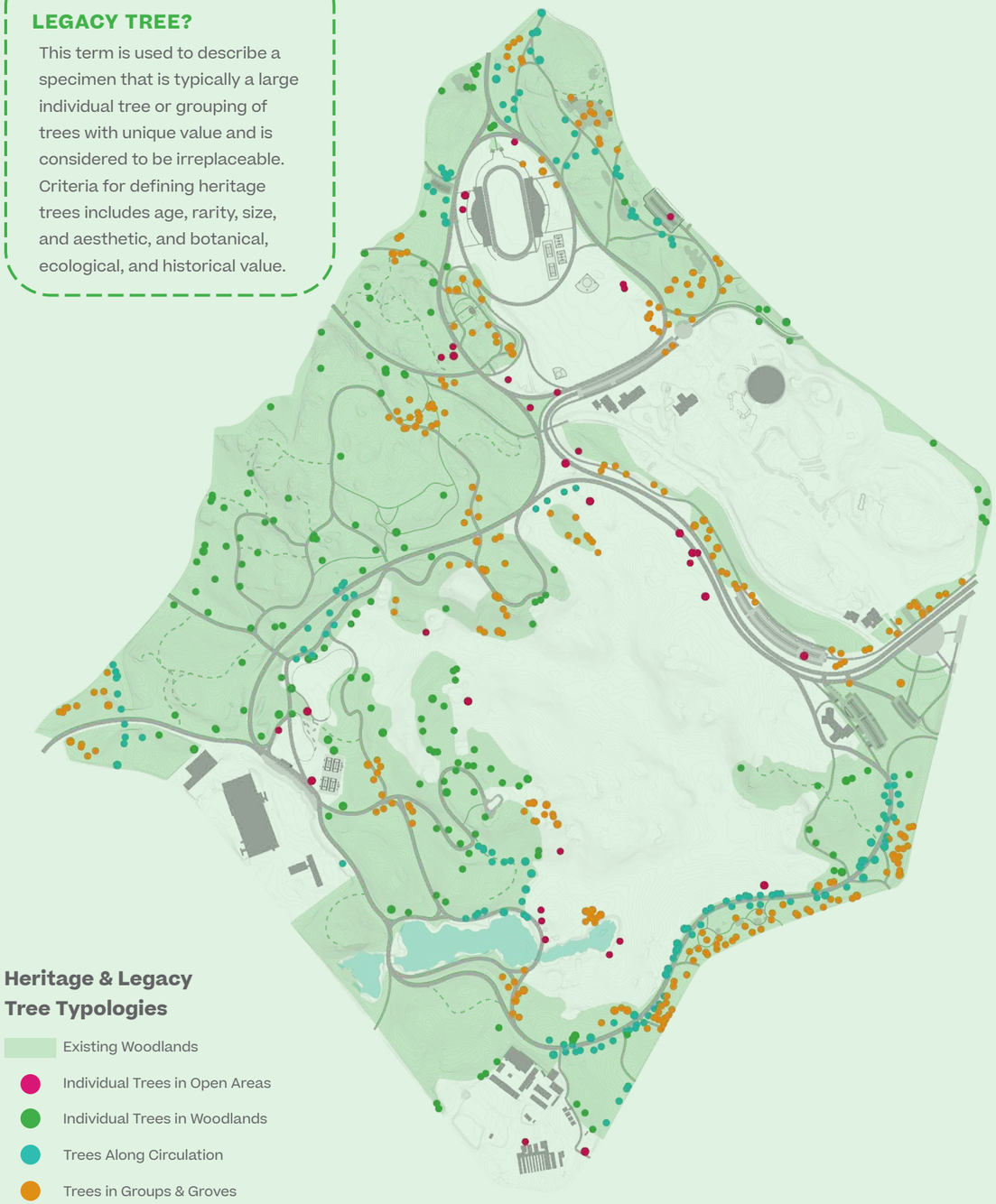
American Beech grove along American Legion Highway


3

Mature White Pines on Schoolmaster Hill

WHAT IS A HERITAGE OR LEGACY TREE?

This term is used to describe a specimen that is typically a large individual tree or grouping of trees with unique value and is considered to be irreplaceable. Criteria for defining heritage trees includes age, rarity, size, and aesthetic, and botanical, ecological, and historical value.



Heritage & Legacy Tree Typologies

- Existing Woodlands
- Individual Trees in Open Areas
- Individual Trees in Woodlands
- Trees Along Circulation
- Trees in Groups & Groves

Legacy Trees are defined as 48"+ diameter, and Heritage Trees as 33"+ diameter.

WHY WORK WITH AN ARBORIST?

Arborists are professionals trained in the cultivation, management, and study of trees, shrubs, and other woody plants. They perform and assist with planting, pruning, tree removals, and preventative and emergency tree care.

Pruning for Habitat

Focus on preservation of stems or limb structures with cavities or large deadwood for animals to make their homes.

Preventative Care

Canker infections on Beech trees thrive in water-logged areas. Unlike many other tree diseases, it can be effectively treated and spread from one tree to the next is unlikely.

Stabilization for Longevity

Pruning, bracing, and cabling area all measures that may be necessary to stabilize an heritage tree as it ages.

The Park Elders:

How can heritage trees be preserved for future generations?

1 Inspect & Monitor Heritage Trees

Use a certified arborist to conduct a risk assessment of the heritage trees in the park, documenting signs of pests or disease or structural instability. Evaluate high-priority trees annually and all others on a regular basis; update the management plan accordingly.

2 Take Preventative Measures

Identify, monitor, and treat signs of insects and disease, including Hemlock Wooly Adelgid and Beech Canker, and improve growing conditions for trees under environmental stress.

3 Stabilize & Prune

Prioritize pruning efforts in visible and high-use areas where safety concerns are heightened and aesthetic impacts are more dramatic, like along primary paths and adjacent to actively programmed areas.

4 Identify Trees for Removal

At times, specimens may need to be removed if they are threatening the safety of park visitors or negatively impacting the health of adjacent trees.

5 Retain Dead Trees for Habitat

Certain birds and other animals prefer to make their homes in dead or decaying trees; deadwood and other remaining limb structure should be selectively preserved where appropriate to expand habitat types.

6 Replant for Continuity and Diversity

Cultivate the next generation of heritage trees through purposeful planting throughout the park. Select species that both hold a historic significance and also add diversity to the park landscape.

Protecting the Park's Greatest Resource

The park's heritage trees have witnessed many important events throughout their lives, outliving most of their human counterparts. Each individual tree also performs essential ecological functions, including sequestering thousands of pounds of carbon dioxide over their lifetimes. Multiplied over Franklin Park's 527 acres, the park's urban forest and eldest trees are an irreplaceable resource.

The Life of a Heritage Tree: Witness History, Grow Resiliency

Manage for Long-Term Stability

Set Standards for Tree Care

To enhance the health of the park's heritage trees and prolong their lifespans, it is necessary to develop standards for their care. In the immediate term, work and treatments should focus on stabilization – structural work and plant health care treatments that safeguard from deterioration or loss. A priority plan should be established to identify which trees are the most important to protect if resources are limited. Priorities are typically based on the location and prominence of the tree, its uniqueness as a specimen, or the degree of risk it presents.

TREE CARE RECOMMENDATIONS

Develop a Site-Specific Tree Care Program

- Maintain continuity from year to year by identifying a specific group or individual that will monitor and care for significant trees in the park.
- Conduct a site-wide inventory to identify and locate significant trees, and develop a formalized classification system, including work specifications that are assigned on a tree-by-tree basis.
- Trees in high use areas of the park should receive a greater level of structural scrutiny with a formal risk assessment and rating that will guide its care.

Inspect & Monitor Significant Trees Annually

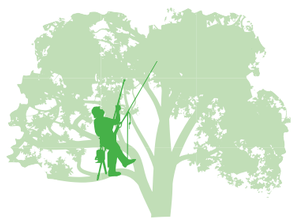
- With a certified arborist, document signs of insects, disease, broken limbs, and other conditions and update tree planning documents as applicable.
- Fence off trees to restrict foot traffic and limit disturbance below the tree canopy for at-risk specimens during treatment and recovery.

Stabilize & Prune for Risk Management

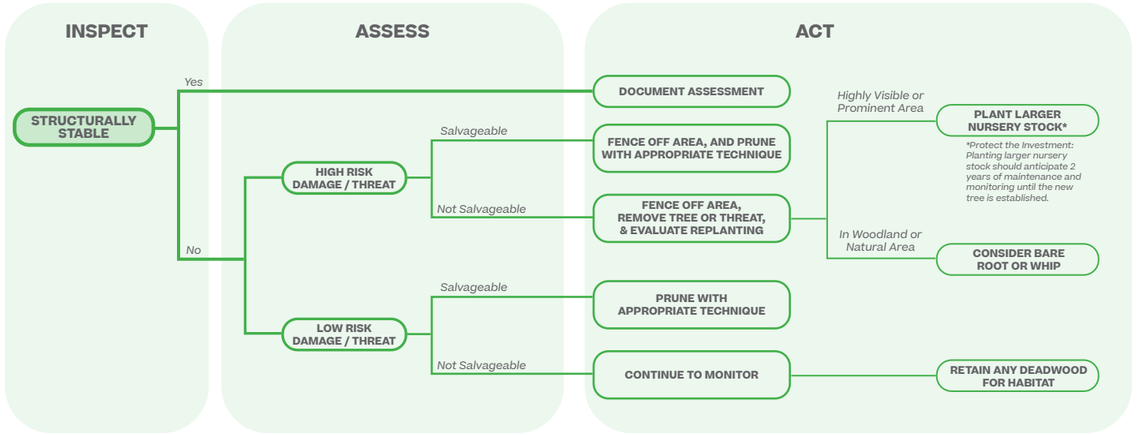
- Increase the use of branch or canopy reduction pruning to reduce end-weight and mechanical failures; use structural support hardware if needed.
- Decrease the use of crown cleaning and thinning pruning methods to preserve habitat and resources, unless the goal is to open light to the ground layer to promote regeneration.
- Use crown raising pruning methods only when view and aesthetics are the top priority.

Retain Dead Trees to Preserve Habitat

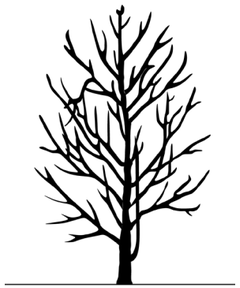
- Preserve stems or limb structures with cavities or large deadwood for habitat.
- Retain structurally sound standing dead/dying trees in low use wooded areas for wildlife habitat and to conserve investment.



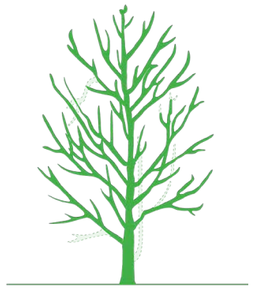
PROCESS FOR TREE PRUNING, REMOVALS, & REPLANTING



PRUNING TECHNIQUES FOR HERITAGE TREES

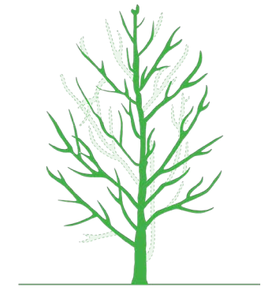


Before Pruning



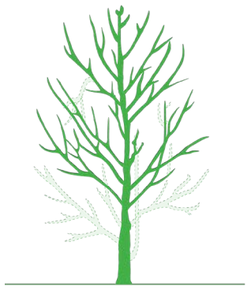
Crown Cleaning

removal of defective limbs to reduce the risk of branch failure, improve plant health, and enhance tree appearance



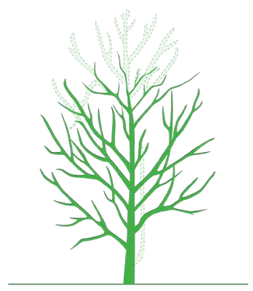
Crown Thinning

removal of live, healthy branches on trees with dense crowns to improve light penetration, air movement, and to decrease wind resistance



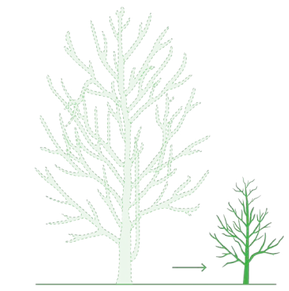
Crown Raising

pruning or removing lower branches and limbs to provide vertical clearance



Crown Reduction

removal of limbs to decrease the height and/or spread of the canopy or individual limbs that are growing close to buildings, other trees, or utilities, or to prevent or correct storm damage



Replanting

In instances of damage that cannot be repaired through pruning, trees may have to be removed if they pose a threat to park users; replanting to establish the next generation of heritage trees is critical to preserving the character of the park.

Increase Durability & Plant Diversity
Introduce Buffers & Redesign Lawns

Turf areas are critical to supporting many community uses and activities, but they do not offer significant ecological benefit. Buffers, which serve as transitional spaces between woodland and open areas, perform important ecological functions, including slowing stormwater and providing habitat for wildlife. They also provide beauty and a sense of enclosure at the edge of open lawns.

KEY CHALLENGES

- **Compaction resulting from high-use of open areas**
- **Lack of plant diversity and natural stormwater filters**

RESTORATION & MANAGEMENT RECOMMENDATIONS

- **Plant the Forest Edge to Provide a Refuge for Wildlife**
- **Introduce Ecological ‘Stepping Stones’ to Expand Dry & Wet Meadows**
- **Introduce Buffers to Frame Open Space**
- **Design Durable Sports Fields & Lawns for High-Use**

WOODLANDS | **BUFFERS** | OPEN


1

The Playstead fields today.

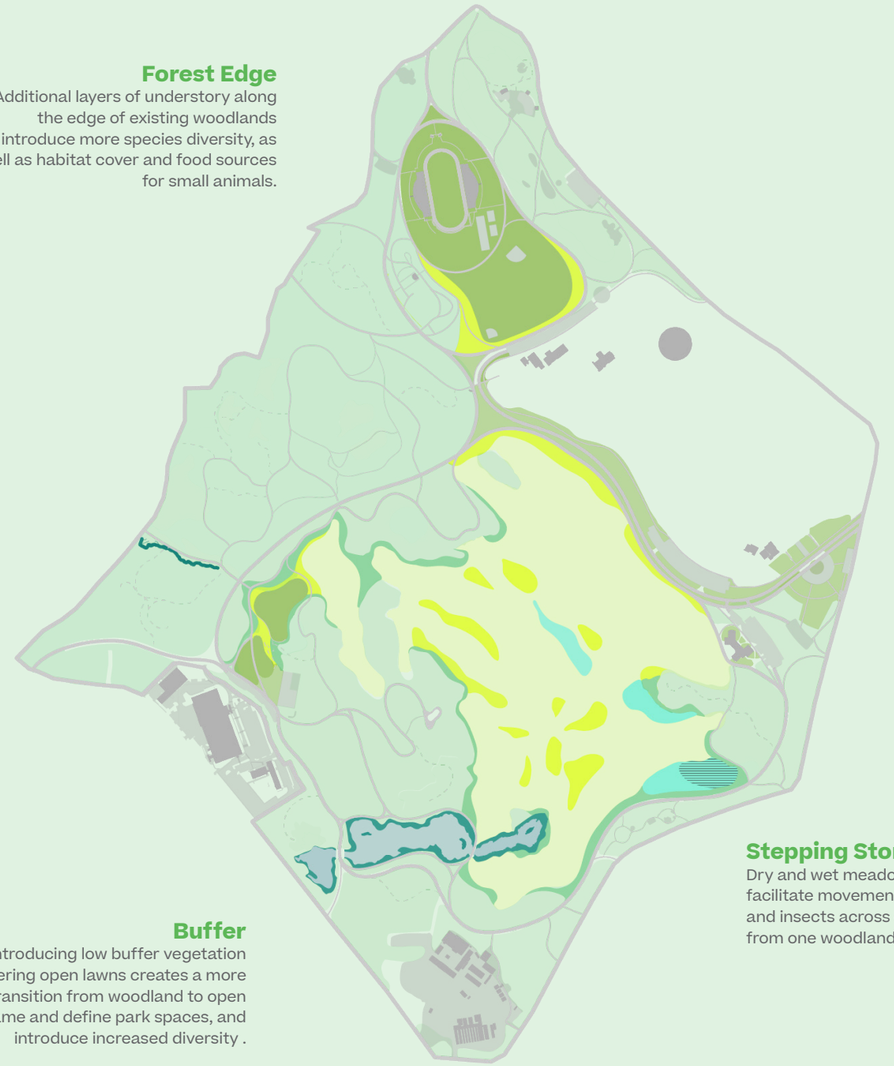

2

Wet meadow buffer between the Circuit Loop & Golf Course


3

Existing meadow buffer between Circuit Drive and the Golf Course

Forest Edge
Additional layers of understory along the edge of existing woodlands introduce more species diversity, as well as habitat cover and food sources for small animals.



Stepping Stones
Dry and wet meadow areas facilitate movement of animals and insects across open areas from one woodland to another.

Buffer
Introducing low buffer vegetation bordering open lawns creates a more gradual transition from woodland to open areas, frame and define park spaces, and introduce increased diversity .

Proposed Ecological Types

- Existing Golf Course
- Dry Meadow or Buffer
- Wet Meadow
- Existing Wet Meadow
- Ellicott Stream
- Pond Edge
- Scarboro Pond
- Athletic Field or Lawn
- Forest Edge
- Woodlands

Spotting Migratory Birds

The park's large size and location near the coast means it plays an important role in the regional ecosystem as a stopover for migratory birds. Local groups, like those celebrating Black Birders Week with an early morning walk, enjoy searching for warblers, vireos, and woodpeckers.

Keystone Species

Eastern Bluebirds and Brown Thrashers are two keystone species whose nesting sites and food habitat would be increased by forest edge and dry meadow buffer planting.

Plants Mark the Spot

Highbush blueberry thrives where groundwater is near the surface.

Shared Space

Insert habitat and stormwater improvements without impacting golf play or other important uses

Scarboro Hill ····· Forest Edge ····· Dry Meadow Stepping Stone ····· Golf Course ····· Wet Meadow Stepping Stone ····· Forest Edge

Transition Zones:
What does a healthy forest edge look like?

1 Provide Shelter & Habitat

Introduce forest edges to work in tandem with wet and dry meadows to provide landscapes that facilitate the movement of animals and insects across the golf course and other open areas from one woodland to another.

2 Increase Dry Meadows

Build on the successes of the existing dry meadow areas in the golf course by incorporating others that create buffer stepping stones without impacting play; incorporate species that create forb-rich grasslands to provide sources of nectar and pollen and winter landscape interest.

3 Add Wet Meadow Stepping Stones

Incorporate wet meadows in naturally low-lying areas to collect and filter runoff as it makes its way to Scarboro Pond.

4 Protect Downstream Water Systems

Incorporate eco-friendly management practices to decrease nutrient pollutant loads in stormwater runoff (including nitrogen and phosphorus) that eventually discharge into Scarboro Pond.

Provide a Refuge for Wildlife
Plant the Forest Edge

Its regional context makes the park a valuable migratory stopover for birds, butterflies, and dragonflies. Yet, there are few flowering plants and shrubs, which has deteriorated the habitat and food supply for animals and pollinators. Introducing mixed forest edges near less heavily programmed areas in the park, like near the golf course and the edges of The Wilderness, will provide a safe haven for small animals, birds, insects, and pollinators, free of intense and active human use.

FOREST EDGE RECOMMENDATIONS

Facilitate Wildlife Movement

- Reduce habitat fragmentation by enhancing woodland edges with a gradient of planting from canopy to groundcover to provide small animals and insects refuge as they move between larger areas of woodland.

Enhance Food Supply

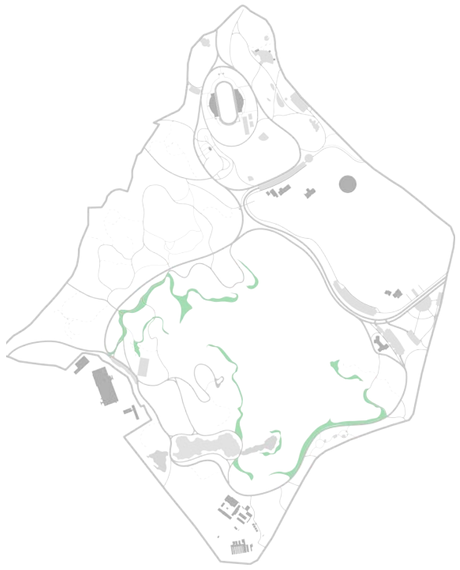
- Increase diversity by introducing flowering and fruiting shrubs and understory to provide food sources for wildlife. This should include nectar and pollen for pollinators and berries for small animals and birds.

Provide Shelter

- Provide additional support by installing bird houses and bat boxes to augment natural habitat. These also have the potential for educational programs.

Balance Habitat & Safety

- Maintain important viewsheds from adjacent pathways to ensure a sense of safety for visitors as they move throughout the park in the evenings and early mornings.



Transitional Habitat

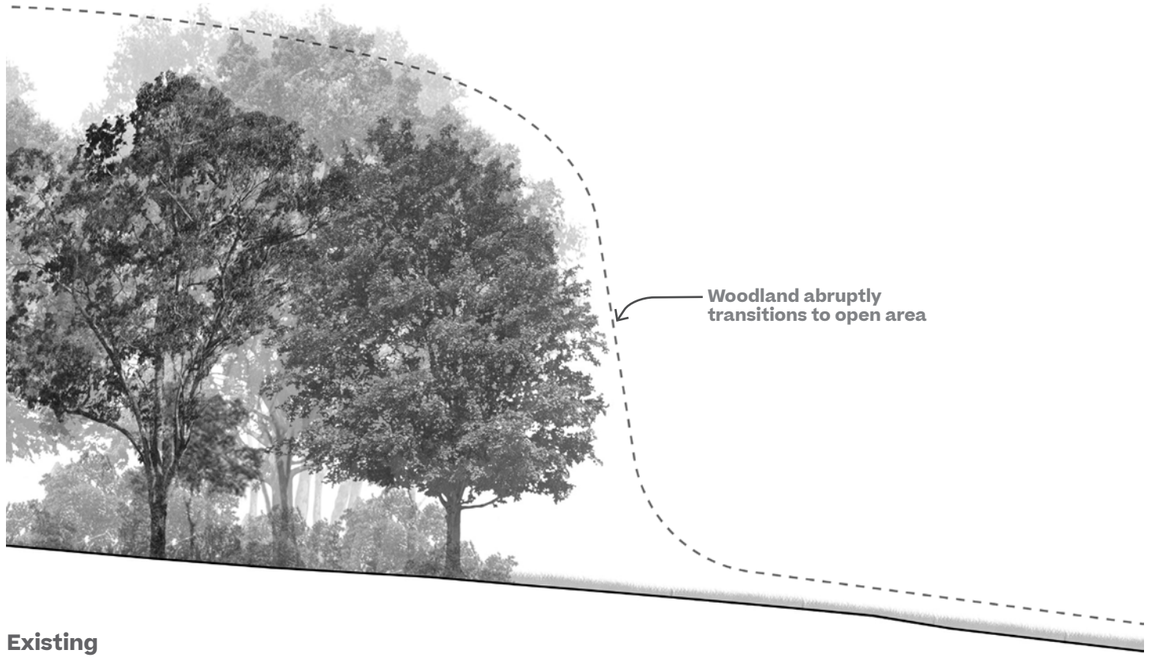
The mixed forest edge, which includes understory and shrub species, is valuable for wildlife cover, food sources, and microclimates, but will require maintenance to keep it from returning to a canopy condition.

Witchhazel *
Hamamelis virginiana L.

Grasshopper

Eastern Bluebird

Hop Hornbeam
Ostrya virginiana



Existing

Oak Hickory Woodland | Mown Lawn & Links

Today, the transition between forest and the open landscape is very abrupt with few layers of planting.

Proposed

Oak Hickory Woodland | Mixed Forest Edge | Dry Meadow & Links

Adding layers of understory along the edge of existing woodlands introduces more species diversity, as well as habitat cover and food sources for small animals.

Introduce Ecological ‘Stepping Stones’
Expand Dry & Wet Meadows

Working in tandem with mixed forest edges, implementing dry and wet meadow ‘stepping stones’ within the golf course and other areas of low activity will help to facilitate movement of animals and insects across open areas from one woodland to another. These stepping stones also serve to slow and filter harmful nutrients out of stormwater runoff and encourage water infiltration into the soil below, reducing detrimental impacts downstream at Scarboro Pond and beyond the park.

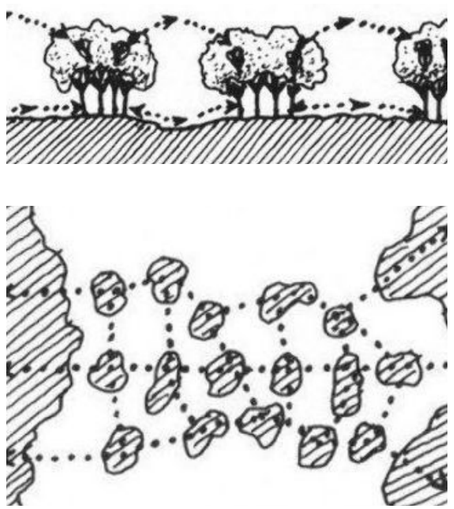
STEPPING STONE RECOMMENDATIONS

Dry Meadow Stepping Stones

- Position areas of dry meadow in zones out of play on high points and along slopes without impacting the course.
- Build upon the grounds crew experimentation with the addition of forbs - or non-grassy flower plants - in out-of-play areas to increase plants that provide nectar and pollen for insects and birds.

Wet Meadow Stepping Stones

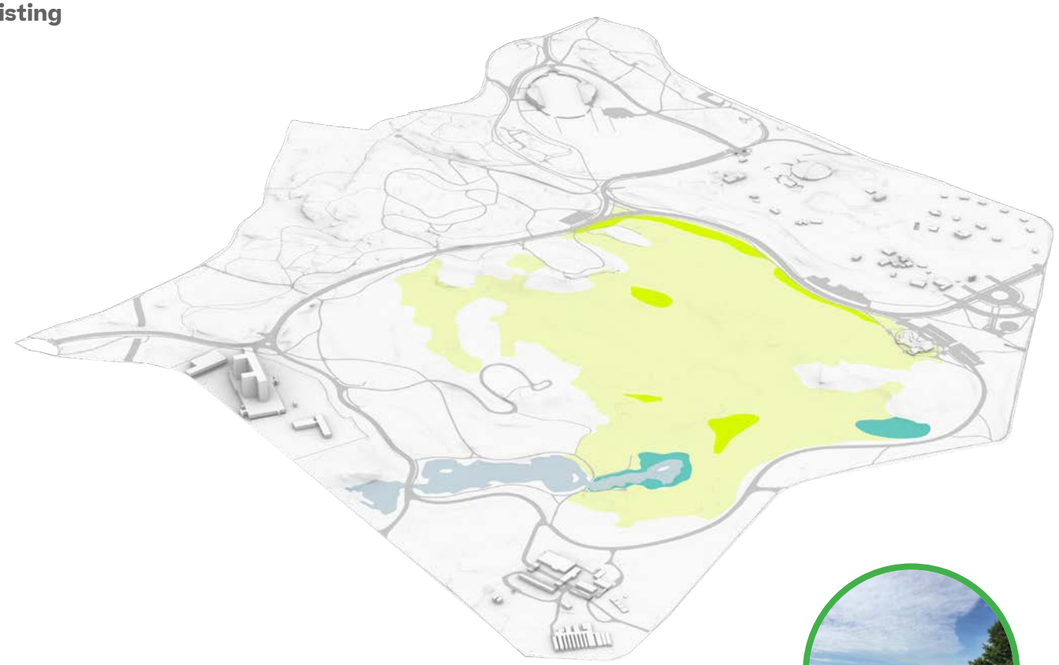
- Locate areas of wet meadow that correspond with natural drainage channels and low points to collect and filter runoff as it makes its way to Scarboro Pond or Ellicott Stream.
- Plant these areas with tussock-forming sedges, which will grow and spread quickly, support many species, absorb water and nutrients from runoff, and sequester carbon.



WHAT IS AN ECOLOGICAL STEPPING STONE?

“Stepping stones” are an ecological concept that describes small areas of habitat that offer a refuge for species as they move between other larger patches of habitat.
(Image credit: Richard TT Forman)

Existing



Proposed

Stepping Stone Habitat

- Dry Meadow & Links
- Existing Dry Meadow Stepping Stone
- Proposed Dry Meadow Stepping Stone
- Proposed Wet Meadow Stepping Stone
- Existing Wet Meadow
- Drainage Watershed

Frame Open Space
Introduce Buffers

Areas bordering the open lawns of the park present an opportunity to introduce buffer vegetation to create a more gradual transition from woodland to open areas, frame and define park spaces, introduce increased diversity and visual interest, and slow and filter stormwater. The character of buffer vegetation should correspond with its ecological context and the adjacent park uses.

BUFFER RECOMMENDATIONS

Introduce Unique Character

- Open park lawns present the opportunity to introduce unique vegetation at the edges that increases the diversity of open areas without impacting function and use.
- Plant the embankment between the upper and lower Ellicottdale lawns and edges of the lower lawn with a pollinator buffer to increase biodiversity, frame the space, and create separation from adjacent programs, like the golf course.
- Plant the existing low lying area adjacent to the Ellicottdale wet woodland with wet meadow species to highlight this unique ecology.
- Plant the embankment at the edge of The Playstead Fields with a grassland buffer to define the fields and highlight the change in topography.

Grassland Buffer

Wet Meadow Buffer

Pollinator Buffer, appropriate for the transition between the upper and lower lawns, and to provide separation between the lower lawn at the golf course at Ellicottdale.

YEAR-ROUND POLLINATOR HABITAT

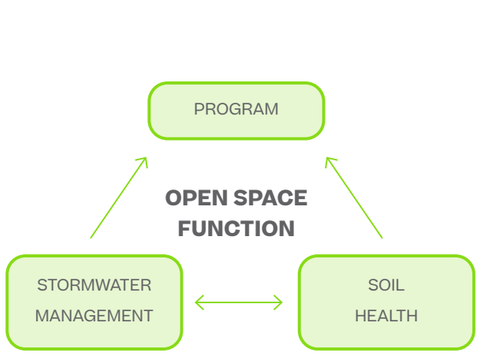
A pollinator buffer surrounding the lower lawn at Ellicottdale increases biodiversity, frames the open lawn, and provides separation from the adjacent golf course.

Spring
For pollinators in April, plant:
Asceplias tuberosa, Milkweed
A host plant for butterflies, as well as an important nectar source for bees and insects.

Summer
For pollinators in May, plant:
Asceplias tuberosa, Milkweed
A host plant for butterflies, as well as an important nectar source for bees and insects.

Fall
For pollinators in September, plant: Aster spp., Asters
Important food source for bees and butterflies.

Winter
Leave stalks, stems, and leaf litter in place for burrowing insects like bees as overwintering sites.



Open Lawns:
What steps are needed to ensure long-term durability and function?

1 Amend Soils & Provide Aeration
Introduce organic soil amendments to enhance soil structure and resiliency by increasing organic matter content, improving water & nutrient retention, and supporting microbial activity. Conduct regular aeration, which will further enhance nutrient and water retention and relieve drainage issues in highly compacted areas.

2 Improve Drainage
Decompact and regrade sports fields and lawns to improve drainage and conditions of play; locate green infrastructure at the edges to slow, collect, and filter nutrient-laden stormwater runoff.

3 Prevent Compaction
The design of turf areas should respond to anticipated use and other potential stressors. Further protect open areas after heavy rains by marking off and allowing lawns to dry out prior to their use.

4 Provide Shade & Circulation
Further support resiliency of open lawns and sports fields by providing designated circulation for bikes and pedestrians; plant canopy trees to provide shade and comfort for park users.

5 Increase Diversity
Introduce plant diversity and habitat at the edges of open areas with meadows and understory trees and shrubs.

Anticipate High Use
Design Durable Sports Fields & Lawns

The park's major magnets all contain open lawns of some kind: The Playstead features large fields that support team sports and major events, Ellicottdale's expanded flexible lawn spaces serve families and small gatherings, and Peabody Circle's new lawn amphitheater and plaza space allows for outdoor education and community events in the shade of canopy trees. For these spaces to function successfully, support for lawns must start below ground with strong, healthy soils that facilitate drainage and durability for year-round use.

LAWN & SPORTS FIELDS RECOMMENDATIONS

Establish a Soil Management Plan

- Conduct a more detailed analysis of individual biological communities and total nutrient content of soils in sports fields and open lawns during an active growing season to determine needs related to increasing diversity of soil organisms and nutrient-supply capacities.

Increase Durability of High Use Areas

- Introduce organic soil amendments to enhance soil structure and resiliency by increasing organic matter content, improving water and nutrient retention, and supporting microbial activity.
- Conduct regular aeration, which will further enhance nutrient and water retention, and relieve drainage issues in highly compacted areas.
- Utilize organic or slow release fertilizers, and do not apply when heavy rain is expected.
- Compaction also impacts large individual trees within open areas; root pruning and soil remediation should be performed to increase their longevity.

Improve Drainage

- Introduce a high-use soil profile, including a functional drainage layer, for sports fields and lawns that get intense use.
- Regrade sports fields and lawns to improve positive drainage and eliminate low areas where water collects.
- Locate green infrastructure (like buffer vegetation or swales) at the edges to slow, collect and filter runoff.
- Protect lawns after heavy rains; mark off areas for 'turf resting' to allow water to fully infiltrate and lawns to dry out prior to their use.

BENEFITS OF LAWN AERATION

Before
Reduced water and nutrient infiltration and increased stormwater surface runoff. Lawn is struggling due to compacted soil and shallow roots.

Treatment
Aerate and fertilize lawn to increase pore space to increase oxygen, water, and nutrient infiltration, allowing for improved respiration and increased aerobic microbes.

After
Stormwater runoff is decreased due to improved infiltration. Deeper roots develop, leading to a healthier lawn.

The proposed Playstead incorporates design features that improve both stormwater management and plant diversity. By regrading the fields with a central high point, surface runoff flows towards a grassland embankment with a french drain at its base to capture water at the edges.

Redirect, Collect & Clean
Strengthen Water Systems

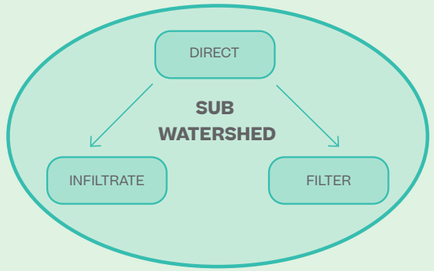
The health and resilience of the park's hydrology go hand in hand with function of the above and below ground drainage systems. Introducing green infrastructure and right-sizing the hard infrastructure will positively impact drainage and water quality as stormwater and runoff make their way to Scarboro Pond and exit the park. The pond faces its own set of challenges with shoreline compaction and erosion, invasive species, and reduced habitat that must be addressed through pond stabilization and restoration.

KEY CHALLENGES

- **Pollution from stormwater runoff**
- **Aging and undersized drainage infrastructure**

RESTORATION & MANAGEMENT RECOMMENDATIONS

- **Integrate Green Infrastructure to Upgrade Drainage Systems**
- **Restore Scarboro Pond by Stabilizing & Expanding Aquatic Habitat**
- **Optimize Drainage Control Points to Decrease Downstream Impacts**




1

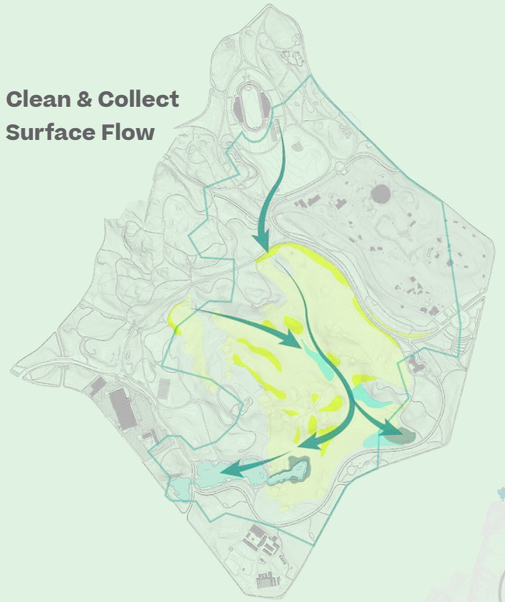
The compacted pond edge.

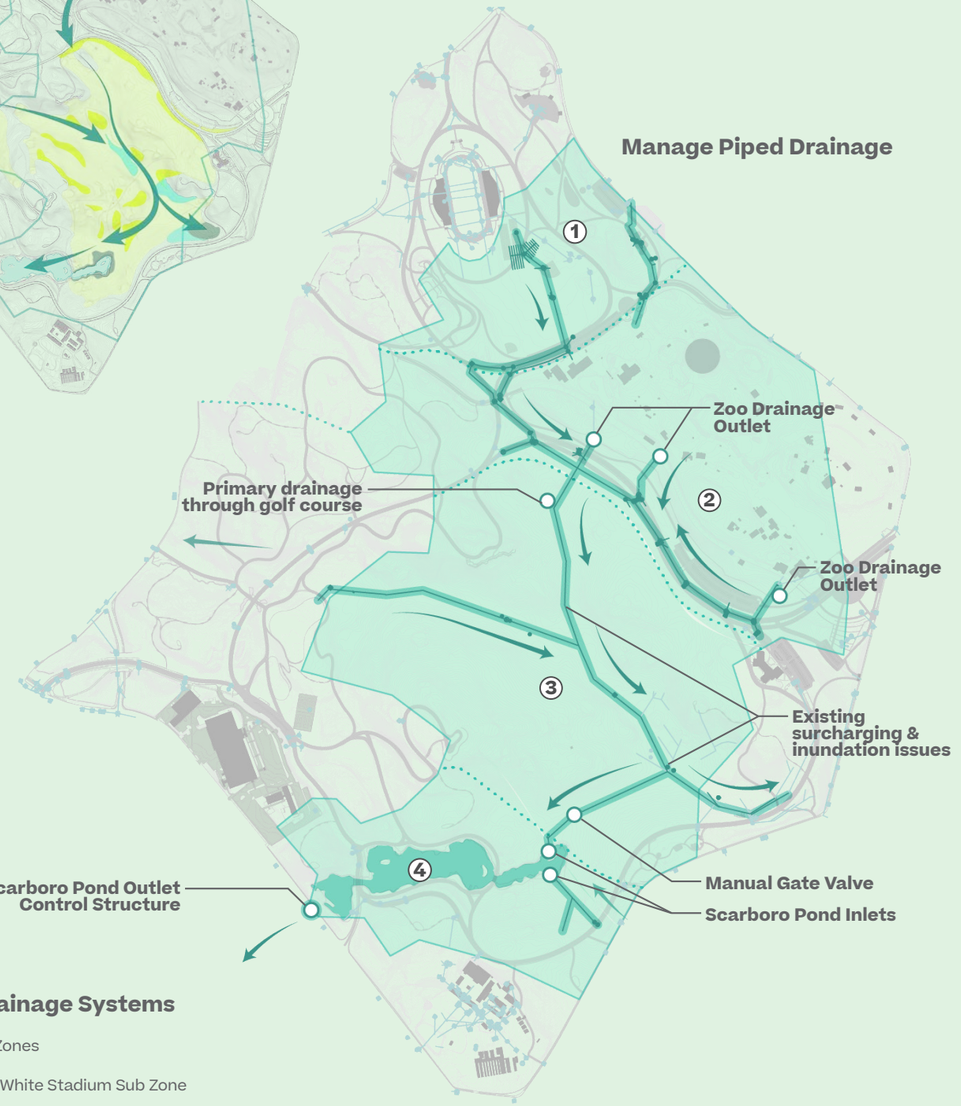

2

Algae blooms at the pond edge near the golf course.


3

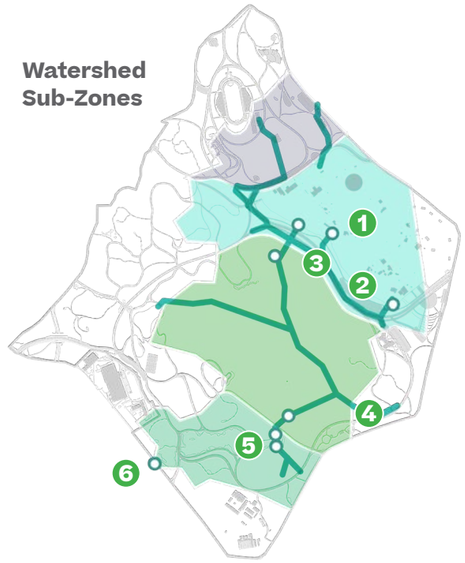
Flooding on Circuit Drive after a rain storm.





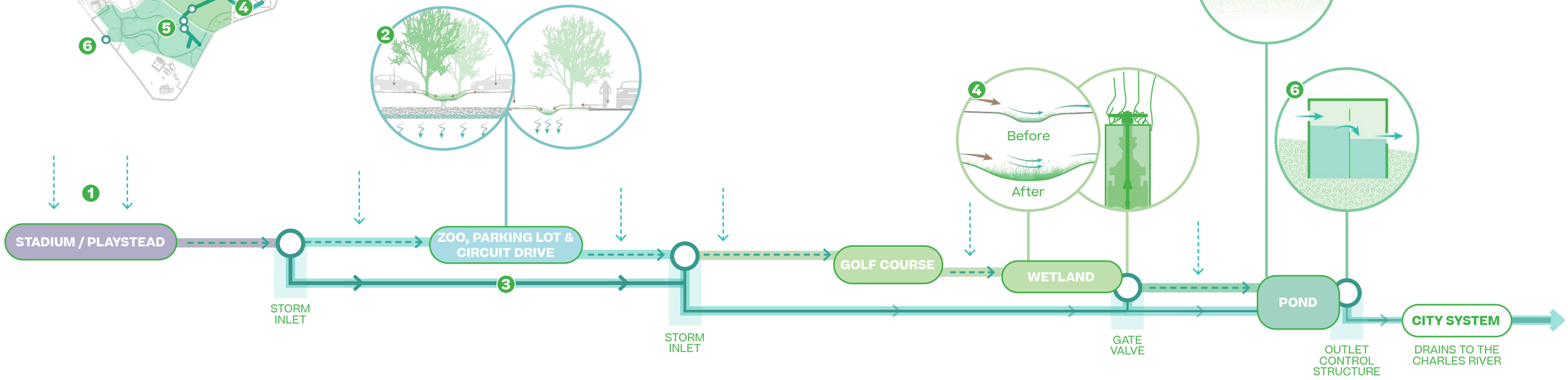
Watersheds & Drainage Systems

- (#) Watershed Sub Zones
- (1) The Playstead & White Stadium Sub Zone
- (2) The Zoo & Circuit Drive Sub Zone
- (3) The Golf Course Sub Zone
- (4) Scarboro Pond Sub Zone
- Water Flow Direction
- Piped Drainage Infrastructure & Control Points



BREAKING DOWN THE WATERSHED

The majority of the park falls within a single watershed that drains to Scarboro Pond, either through piped drainage infrastructure or via surface runoff. Both carry pollutants from fertilizers and harmful chemicals from oils and salts from Circuit Drive and parking areas. Breaking down the watershed into smaller areas that can slow, capture, filter the water or increase infiltration into the soil, reduces the amount of water draining to the pond and improves its water quality.



Water Systems:

How can the park improve water quality downstream?

1 Break Down the Watershed
Use local green infrastructure to treat and infiltrate run-off from paved surfaces in the upper Scarboro Pond watershed before it enters the piped underground drainage system.

2 Intercept Drainage from the Zoo
Take advantage of improvements along the zoo's edge to implement subsurface storage within the parking lot and biofilter swales along Circuit Drive to intercept, treat, and infiltrate runoff.

3 Update Drainage Infrastructure
As improvements are made, upsize existing outdated and undersized drainage infrastructure to reduce overall pressure on the system and to improve issues with surcharging; optimize existing gate valve to improve efficiency of the system.

4 Optimize the Wetland
Implement naturalized surface storage by supplementing the existing wetland with naturalized stormwater wetlands to provide additional capacity within a system currently impacted by surcharging.

5 Augment the Pond Edge
Provide filtration and water quality treatment at existing outfall locations at the pond edge, including sediment forebays; consider in-pond enhancements like aeration to further improve water quality and aquatic ecology.

6 Update the Control Structure
Evaluate the existing outfall structure and consider modifications to allow for increased storage and future flood resilience.

Upgrade Drainage Systems
Integrate Green Infrastructure

A big factor in the declining water quality in the park is polluted runoff from Circuit Drive and parking areas. At a minimum, the park must manage its water quality and quantities within its own footprint to mitigate impacts beyond the park's boundaries. Sizing of all water-related infrastructure should anticipate stronger and more frequent storms associated with the changing climate.

STORMWATER MANAGEMENT RECOMMENDATIONS

Break Down the Watershed

- Create smaller sub-watersheds within the park that intercept stormwater and collect, filter, and slow runoff within their own boundaries to decrease the amount of water that moves from one sub-watershed to the next and reduce stress on the overall drainage system

Hold and Release

- Use parking lots as an opportunity to address runoff from regular to medium-sized storm events by designing them to slow and hold the peak stormwater runoff.
- Design for infiltration by disconnecting piped connections to the larger drainage system, allowing runoff to feed the aquifer, or by detaining water and slowly releasing it into the system via an upsized pipe. Consider the use of permeable paving where appropriate.

Slow and Clean

- Use Circuit Drive as an opportunity to intercept runoff from the Zoo before it reaches the Golf Course by re-routing runoff into vegetated swales via curb cuts to filter and slow water before it enters the piped system

Direct and Convey

- Restore and enhance the function of historic cobble swales that have become buried or broken and provide regular maintenance to clear debris to ensure proper flow of runoff to drain inlets

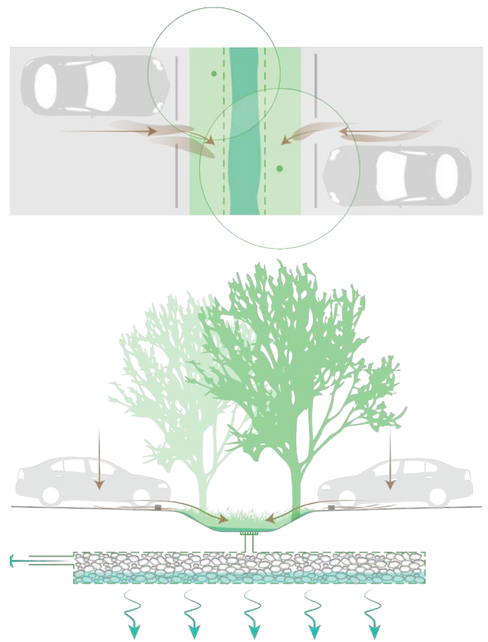
Filter

- Direct surface runoff to french drains at the perimeter of open lawn areas, like The Playstead, to slow runoff and increase filtration

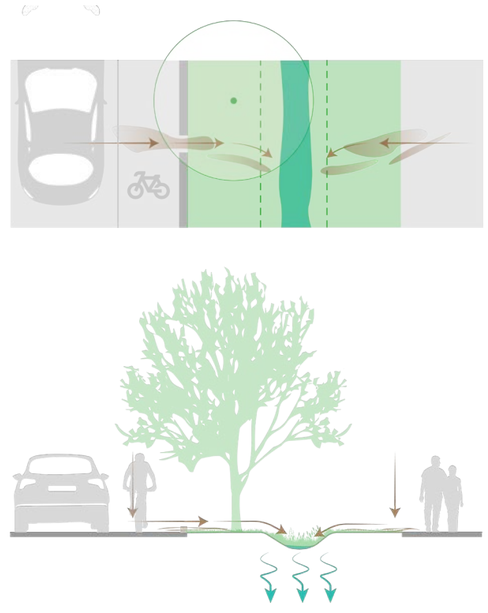
Vegetated swale in the center of parking.

Pedestrian paths connected to parking.

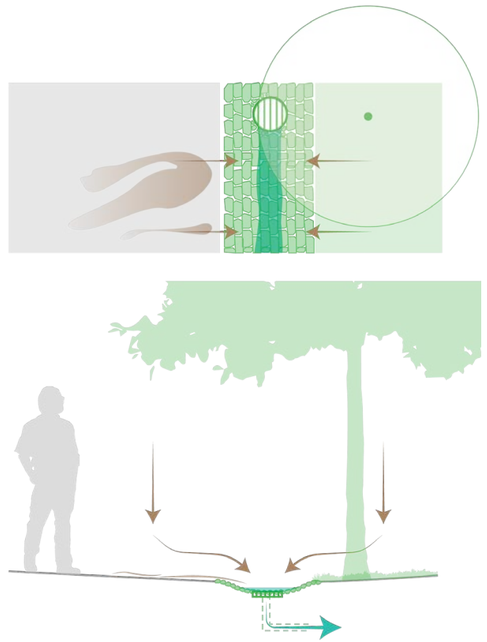
Vegetated swale at the edge of parking.



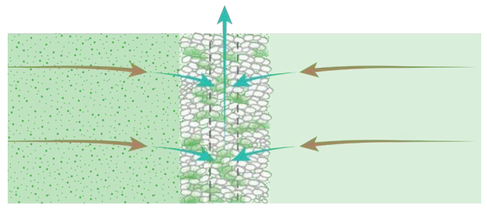
Hold and Release

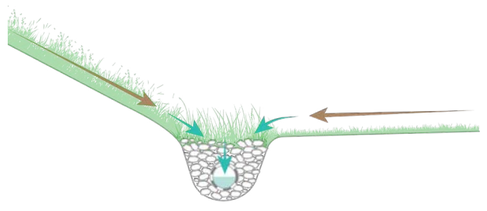


Slow and Clean



Direct and Convey





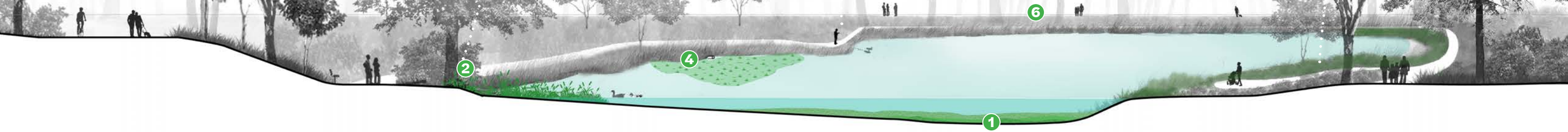
Filter

Narrow-leaved Cattail

Canary Reed Grass

Aquatic Invasives

Known for its fast growth, the canary reed grass is an aggressive invasive that spreads quickly. The entire root mass must be removed to eliminate it. While Narrow-Leaved Cattail is only considered non-native, it certain contexts it can behave as an invasive plant; they can be controlled by cutting them back in mid-late summer.



Circuit Loop — Scarboro Pond — Scarboro Hill

Scarboro Pond:

How can the pond operate as essential ecological infrastructure?

1 Remove Sediment Build-Up

Investigate the pond to identify areas of sediment build-up and muck on the bottom to increase water storage capacity and improve water quality for wildlife.

2 Remove Invasives

Remove invasive species (and those that behave like invasives) to allow sun to reach the water and native emergent plants along the edge.

3 Expand the Edge

Create a more gradual slope to the water's edge and stabilize with native emergent and aquatic species; decompact soils around the base of existing trees that have been impacted by years of foot traffic.

4 Improve Water Quality

Filter stormwater at outfall locations to reduce the presence of duckweed and algal blooms; consider aeration to further improve water quality.

5 Provide Access to the Water's Edge

Allow visitors to access the edge of the pond only at specific points to prevent widespread soil compaction along the banks. Educate the community about the impacts of foot traffic. Manage high vegetation open up views from walking paths.

6 Update the Control Structure

Evaluate the existing outfall structure and consider modifications to allow for increased storage and future flood resilience.

Stabilize & Expand Aquatic Habitat

Restore Scarboro Pond

A popular park feature, Scarboro Pond serves many functions - unique habitat, critical stormwater infrastructure, and park destination to observe wildlife near the water. Years of visitor foot traffic and an increased goose population has compacted the pond's edge, impacting the roots of large trees and causing erosion at its banks. In other areas, unmanaged and overgrown vegetation blocks views to the water. Stormwater carrying fertilizers and pollutants from across the park drains into the pond from the golf course and piped outfalls, degrading water quality and habitat and encouraging invasive species growth.

POND RESTORATION RECOMMENDATIONS

Remove Polluted Sediment

- Built-up sediment deposited by runoff and muck at the bottom of the pond holds accumulated pollution and contributes to excess nutrients in the water column, causing imbalance for wildlife habitat; the pond should be investigated to identify select areas to carefully remove the polluted sediment via dredging operations.

Thin Vegetation & Remove Invasives

- Remove invasive plants (and those that behave as invasive) at the pond's edge, like the narrow-leaf cattail; this may have to be performed from a small boat to reach all invaded areas.
- Thin dense vegetation on the banks to allow sun to reach the water and emergent plants.

Expand the Edge to Increase Habitat

- Decompact and create a more gradual slope to the water's edge to increase the pond buffer.
- Stabilize the edge with native emergent and aquatic species, including grasses, sedges, rushes, and bulrushes that serve to reduce erosion and slow and filter runoff.

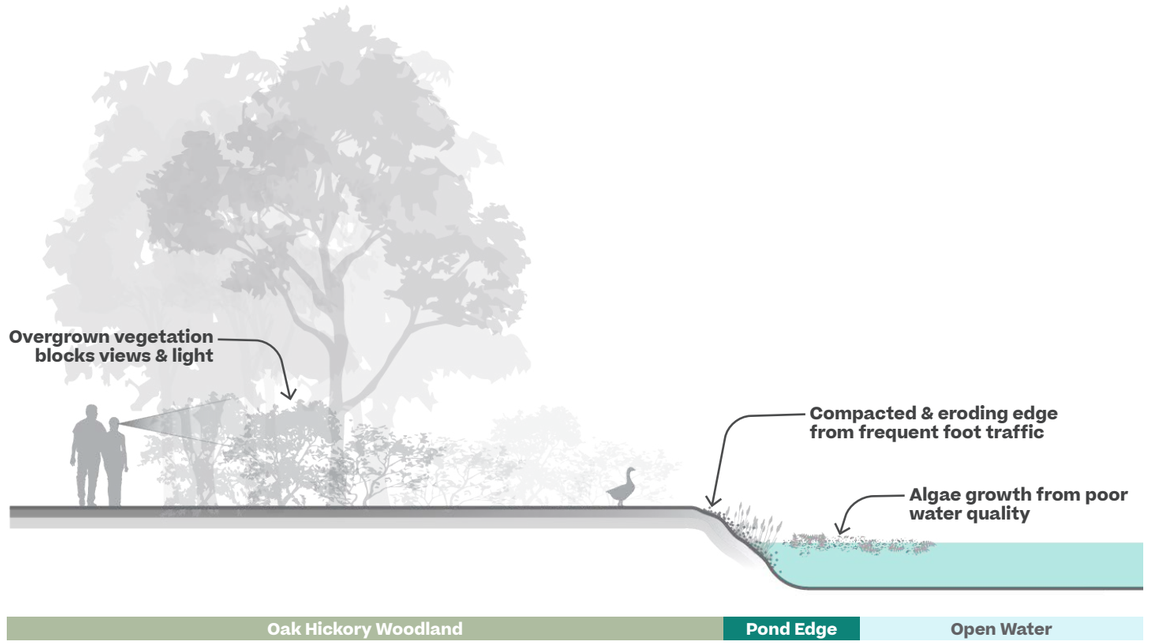
Provide Access

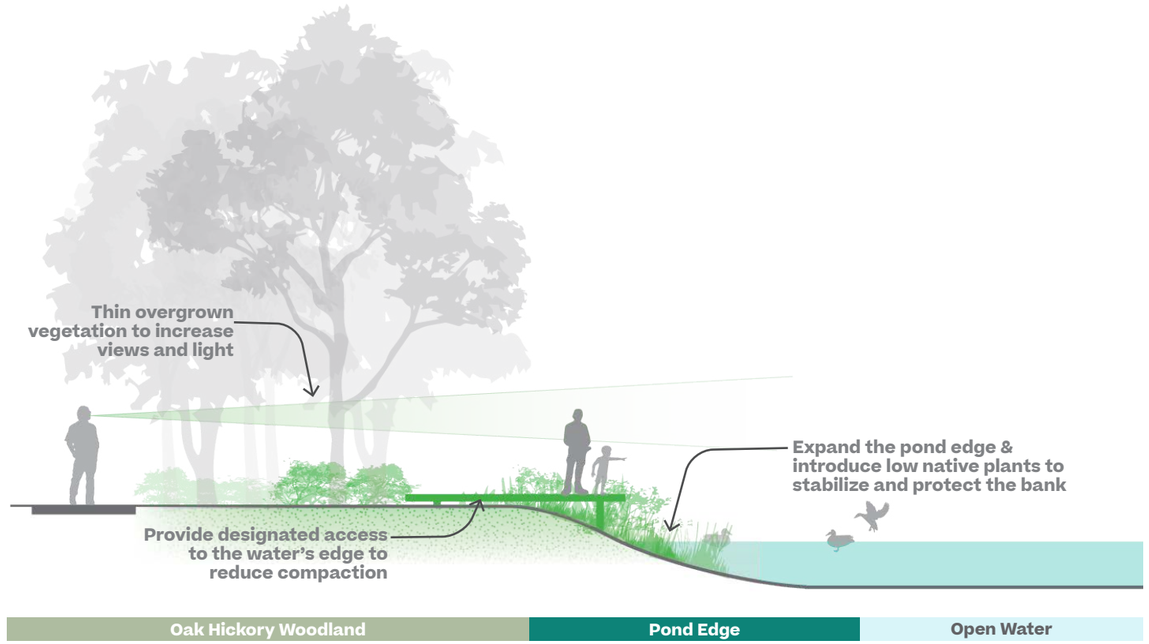
- Reduce foot traffic causing compaction at the edge by providing a few select access points to reach the water via elevated boardwalk landings.
- Manage high vegetation to allow for views to and across the pond to enjoy wildlife and scenery.

Protect Ellicott Stream

- This unique aquatic feature in the lowest lying area of the park along the Williams Street entrance, is healthy and has good water quality; it should be protected detrimental stormwater runoff from nearby Circuit Drive and Forest Hills Street.

A vegetated pond edge.





Decrease Downstream Impacts

Optimize Drainage Control Points

Increasing Scarboro Pond's storage potential starts outside of the boundaries of the pond itself and must consider opportunities upstream in the golf course and downstream at the outlet control structure for a holistic approach to retrofitting the system of how water is controlled and moves through this area of the park.

POND INFRASTRUCTURE RECOMMENDATIONS

Divert Stormwater During Large Events

- The gate valve structure within the golf course provides the ability to manually control the quantity and speed of piped water that flows into the pond at any given time. If the pond's water level is getting too high, water can be diverted into the wetland within the golf course.
- Enhancing the drainage system with naturalized stormwater wetlands will provide additional storage capacity for overflow relief and surface runoff in large rain events. It will also help to prevent surcharging of the piped system in other areas within the park.

Filter Water at Piped Outfalls

- Provide filtration and water treatment at existing outfall locations by introducing sediment forebays that include several underground chambers and a vault for cleanout.
- Evaluate an aeration system for the pond to break down bacteria, improve water quality, and reduce algae blooms.

Increase Pond Storage Capacity

- Consider opportunities in large storm events to utilize the pond for increased storage up to the 100' buffer.

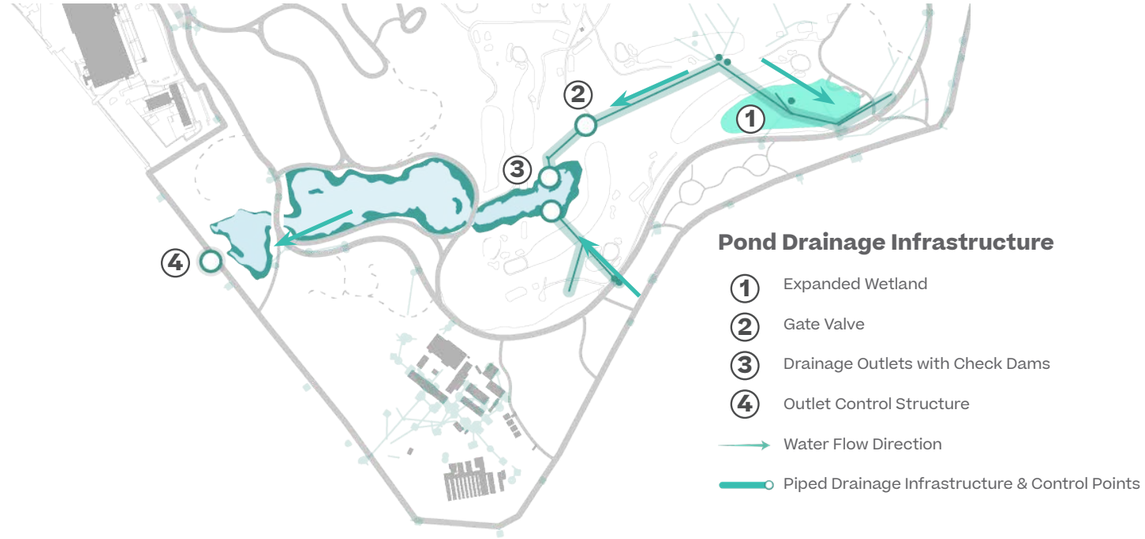
Upgrade the Outlet Structure

- Evaluate the outlet structure maintenance and potential modifications or upgrades that would allow for increased water storage in the pond and improved future flood resilience.

The existing outlet control structure at Scarboro Pond

Precedent for a vegetated check dam and sediment forebay.

DRAINAGE CONTROL POINTS



FILTER WATER AT PIPED OUTFALLS