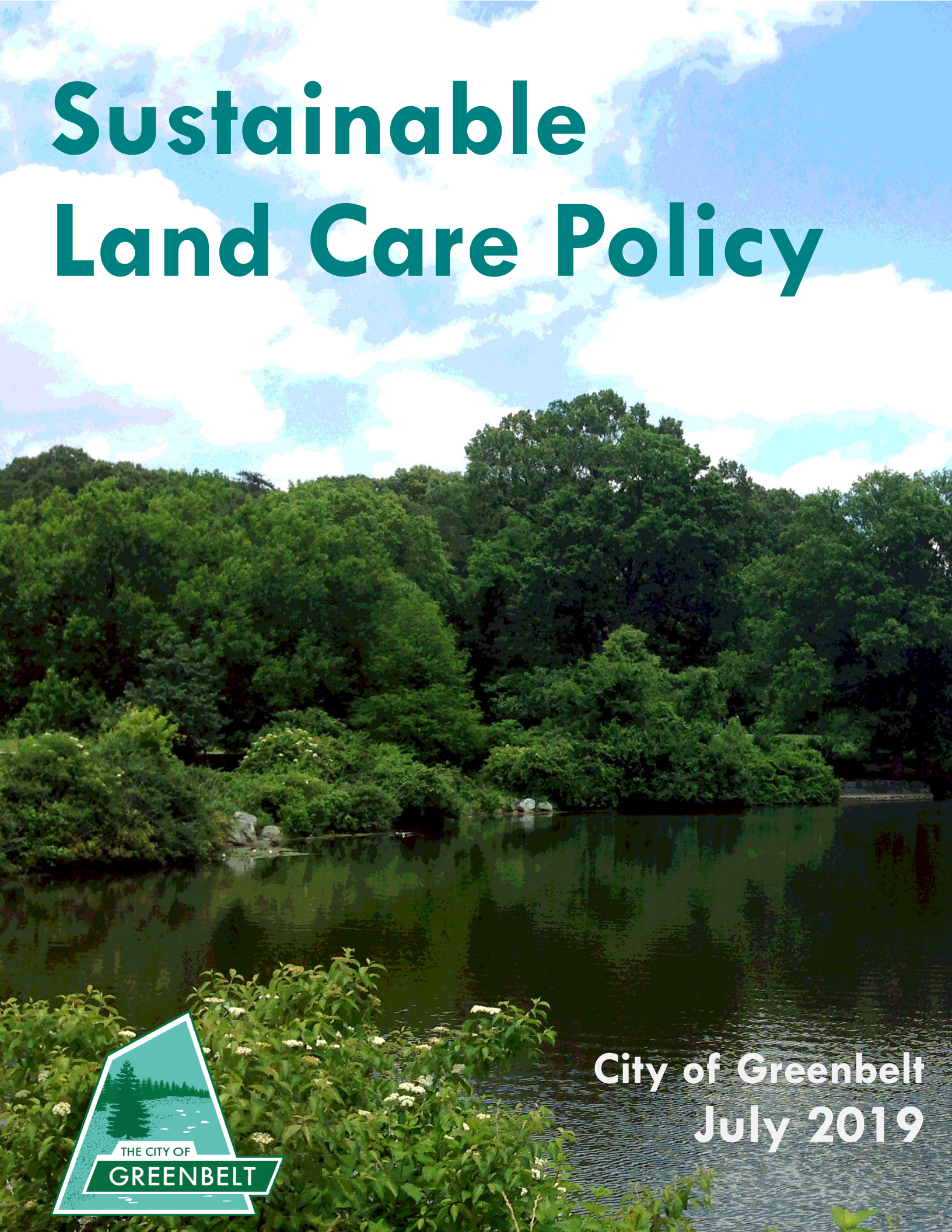
Sustainable Land Care Policy



City of Greenbelt

July 2019

Introduction

Sustainable land care means planting what will do well in regional climates, conserving water, using organic sources of nutrients, minimizing the use of pesticides, building soil health, and minimizing the impacts of polluted runoff.

Background:

The City of Greenbelt (City) has always been a leader in environmental stewardship. Founded in 1937 as one of America's first Planned Communities and "Garden Towns," the layout of the City was designed for sustainability and community interaction. Over the years, Greenbelt citizens have remained active in local greening efforts, and as a result, the City has retained much of its historic charm.[1]

In 2007, the Greenbelt Advisory Committee on Environmental Sustainability (Green ACES) presented a request to City Council in favor of adopting organic land care practices. After several years of research and discussion between City Staff (Staff) and Greenbelt citizens, an initial draft of a Sustainable Land Care Policy emerged.[2]

This Sustainable Land Care Policy (Policy) builds upon the concepts of the initial draft by establishing operational guidelines that protect environmental health, promote staff safety, and make efficient use of municipal resources. The Policy is intended to be a living document that is reviewed on a regular basis and is updatable and adaptable to a variety of factors including: climate change, introduction of invasive pests and plants, passage of new regulations, and shifting research patterns.

Geography:

The City has a total land area of 6.34 square miles, of which 6.28 square miles are land and 0.06 square miles are water. Staff manages 515 acres of parkland, a 709 acre National Historic District, and numerous outdoor recreation amenities. Greenbelt is located within three sub-watersheds that drain into the Anacostia and Potomac Rivers.

Organization:

The Policy applies to all City-owned and maintained property such as playgrounds, except for specific areas that are governed by code under an alternative policy. For example, the Forest Preserve Management and Maintenance Guidelines, adopted by City Council in 2007, is the policy that governs the Greenbelt Forest Preserve pursuant to Chapter 12, Articles 8 and 9 of the Greenbelt City Code[3].

The Policy applies to all Staff working within the City, including Public Works employees and contractors. The Policy will be implemented by trained, certified, and licensed Staff whose actions are regulated by the State of Maryland and the Environmental Protection Agency. Staff will have access to education resources that promote sustainable landscaping practices.

Areas of Consideration:

The Policy describes sustainable approaches for the following areas of consideration:

1. Site Analysis & Design
2. Plant Care
3. Athletic Turf
4. Watering
5. Trees
6. Invasive Species
7. Composting & Mulching[4]

Site Analysis & Design

The secret to successful landscape design and maintenance is through proper planning.

Site Analysis & Design:

The goal of Site Analysis & Design is to gather data and record observations about a landscape site. This information is utilized to develop landscapes that are sustainable and require minimal care. A Site Analysis & Design includes the following considerations:

1. Soil
2. Plant Species
3. Wildlife
4. Sunlight
5. Access
6. Water

Soil:

One of the first steps toward establishing a healthy landscape is an analysis of the soil structure and nutrient composition. Since Greenbelt's soil has been significantly altered—due to years of construction, agricultural practices, and other human activities—it's important to conduct thorough soil testing on a regular basis.

The City will adhere to the following methods in order to best maintain soil:

1. Soil testing of landscapes and athletic fields conducted in accordance with ASTM Standard D5435 – 13, *Standard Test Method for Diagnostic Soil Test for Plant Growth and Food Chain Protection.*[5]
2. Proposed soil, sediment and erosion alterations will be in compliance with mandatory requirements of Maryland Department of the Environment's *Standards and Specifications for Soil Erosion and Sediment Control.*[6]

Plant Species:

Plants that are properly matched with their surrounding environment have positive effects on the local ecosystem. Determining the "right plant for the right place" can reduce maintenance needs, simplify watering routines, and attract and benefit a diversity of wildlife.[7] The City will employ the following principles when analyzing plant placement:

1. Preference given to native, non-invasive plants for restoration of natural areas—which have adapted to the conditions of the region, require less maintenance, and provide a deep root structure for capture of rain water runoff.
2. Utilize plants with proven pest and disease resistance for landscape and street trees.
3. Select plants that are tolerant to environmental pressures and conditions.
4. Select a diversity of plants—monocultures are prone to disease and insect infestation.
5. Preference to purchase plants from local nurseries that sustainably grow plant stock.

Wildlife:

Greenbelt is home to a diversity of wildlife. By mimicking natural ecosystems, local landscapes can provide shelter, nesting sites, food, and water sources for an abundance of species.[8]

Greenbelt Staff will utilize the following principles to attract and retain wildlife:

1. Develop diverse landscapes—different wildlife species have varying needs for survival. The more vibrant the landscape, the more wildlife it can expect to attract.
2. Design around existing trees or other significant vegetation—by linking plant areas together, a "habitat corridor" is created for wildlife to travel to and from natural areas

Sunlight:

Proper sunlight is critical to plant growth and health. All plants need sunlight but not all plants need the same amount or intensity of sunlight. Many landscaping areas in Greenbelt exist around buildings, by streets, and near mature trees. These objects can affect the amount, intensity, and duration of sunlight a plant receives.

The City will consider the following when selecting plant species for different landscaping areas:

1. Duration of sunlight, whether the area receives morning, afternoon, or all day sunlight.
2. Intensity of sunlight, midday and afternoon sunlight is more intense than morning sunlight.
3. Nearby objects can obstruct or intensify the effect of sunlight, buildings can block sunlight or reflect it, trees can reduce the intensity of sunlight, streets can raise the air temperature and dry out plants.

Access:

Proper access is needed to maintain landscaped areas. Care needs to be taken when using vehicles to mitigate soil compaction and plant damage when working in and around landscaped areas.

The City will take the following into consideration when selecting new landscaped areas and planting in existing landscaped areas.

1. Drought tolerant plants will be selected in areas that have no irrigation or are not easily accessed by a watering truck.
2. Trees will be planted far enough apart to allow vehicle access without damaging roots by soil compaction.

Water:

See page 9.

Additional Considerations:

A Site Analysis & Design can include a variety of professional recommendations. Greenbelt Staff will also consider, but not be limited to, the following directives:

1. Strive to reduce the amount of impermeable surfaces throughout the City—by choosing permeable surfacing options during design phases that promote improved storm water runoff quality.
2. Evaluate parking islands, and other similar areas near paved surfaces for conversion to storm water management entities—such as rain gardens.
3. Prohibit vehicle use in turf areas and tree protection zones—unless approved by the Public Works Department.

Plant Care

Sustainable plant care meets the needs of the present without compromising the needs of the future.

Plant Care:

All vegetation needs nutrients in order to thrive. Most plants can obtain these minerals through the soil and atmosphere, depending upon their location, age, and species. On occasion, it may be prudent, or even required, to consider additional land management practices.

Fertilizers:

Fertilizers are materials of natural or synthetic origin that supply essential nutrients to plants.[9] Due to potential impact on the environment—including runoff into local waterways and buildup of excessive soil nutrient levels—the use of fertilizers is often not recommended.

With proper care of plants and soil, most landscapes can survive without additional inputs. However, if nutrients are missing from the soil, the growth rate of plants will be limited. The City will consider fertilizers in the following instances:

1. When establishing new plant beds and areas where the soil is nutrient deficient.
2. To invigorate growth of trees in decline, as determined by a Licensed Arborist.

Fertilizers will be employed only after a soil test has been conducted, and results indicate a lack of nutrients to sustain plant life.[10] Maryland Nutrient Management regulations require soil testing prior to fertilizer application so the types and amounts are specific to correct deficiencies. With the proper management of soil, the use of fertilizers may be reduced or even eliminated in some circumstances. It is important to note that utilizing sources of nutrients that are renewable resources such as blended organic fertilizer is a viable means of supplying necessary plant nutrients.[11]

The City will observe guidelines established under the *Maryland Nutrient Management Law*[12], including:

1. Staff that use fertilizer must be certified by the Maryland Department of Agriculture or work under direct supervision of certified persons.
2. No fertilizer applications within 15 feet of waterways or as specified by State Law.
3. Do not apply fertilizer between November 15 and March 1.

Pesticides:

Pesticides—which include insecticides, herbicides, and fungicides—are substances intended to prevent, destroy, repel, or mitigate pests.[13] By their very nature, pesticides can harm the environment because they are designed to adversely impact living organisms.

The City recognizes that pesticides are valuable tools in protecting both human and environmental health. However, emerging research has linked a higher risk of adverse health effects to pesticide applicators. These risks can be mitigated by proper training, education, and the wearing of personal protection equipment (PPE).

By completing a Site Analysis & Design, many pest problems can be reduced. The following preventive measures will be implemented to diminish potential pest impacts:

1. Selection of plant species that are proven to be pest resistant.
2. Regular monitoring of landscapes to determine pest threats.
3. Conduct soil testing as needed to maintain healthy soil and disrupt pest population.
4. Inspect all new plant material orders to ensure they are insect and disease-free.

Integrated Pest Management (IPM) and Organic Pest Management (OPM) are two related valuable tools to assist the City in Pest Management.

Organic Pest Management	Integrated Pest Management
1) Preventing plant and pest problems.	1) Preventing plant and pest problems.
2) Identifying pests, beneficials and their ecology.	2) Identifying pests, beneficials and their ecology.
3) Regular monitoring of plants, pests, beneficials and practices that affect them.	3) Regular monitoring of plants, pests, beneficials and practices that affect them.
4) Taking action once pest exceeds threshold if necessary using an integrated approach utilizing physical, mechanical, cultural, biological, and organically accepted chemical controls.	4) Taking action once pest exceeds threshold if necessary using an integrated approach utilizing physical, mechanical, cultural, biological, **and (as a last resort) the least toxic, most environmentally-friendly chemical controls.**
5) Evaluating action, recordkeeping, continuing to monitor, and assessing the effect of pest management.	5) Evaluating action, recordkeeping, continuing to monitor, and assessing the effect of pest management.

The City will maintain City-owned and maintained property through OPM and IPM practices. **The City will follow OPM protocol until non-organic chemical controls are necessary.** If chemical controls are necessary, only the least toxic and most environmentally friendly pesticides will be used on City property. This rule applies to all maintenance done by City employees and to all City contracts.

These measures below are part of IPM a strategy that manages pest damage by the most economical means and least possible hazard to the environment.[14] IPM uses several compatible techniques to achieve safe, long-term pest management:

1. *Cultural Controls* - Practices that reduce pest establishment, reproduction, and survival - healthy soil, proper watering, and sanitation.
2. *Biological Controls* - The use of natural enemies - predators, parasites, pathogens, and competitors - to control pest damage.
3. *Mechanical Controls* - Use of barriers to exclude pests and create unsuitable living conditions.
4. *Chemical Controls* - Use of pesticides, as a last resort, in combination with other approaches.

There are effective alternatives to the use of pesticides for most landscaping applications. As previously noted, NOFA has developed a standards-based approach to organic landscape maintenance that avoids the use of pesticides, while promoting a healthy landscape. When pesticides are considered, elements of the NOFA *Standards for Organic Land Care: Practices for Design and Maintenance of Ecological Landscapes* may be utilized.[15] These proactive strategies aim to further enhance biodiversity, biological cycles, and soil biological activity; and include:

1. Minimizing known or suspected effects on human health and the environment
2. Minimizing persistence in the environment of the applied material
3. Maximizing material effectiveness to keep the amount and number of applications to a minimum.
4. Use naturally occurring materials where possible.

In some cases, Maryland Department of Agriculture (MDA) or other Government entities mandate the use of pesticides. Recent outbreaks of gypsy moth and emerald ash borer have resulted in a Federal Quarantine managed with a combination of insecticides.[16]

Unless mandated, Greenbelt will only apply pesticides as a last-resort control mechanism. The following guidelines will be employed:

1. Staff must be certified/licensed to use pesticides - or work under direct supervision of certified persons - according to Maryland's Pesticide Applicator's Law.[17]
2. Staff will abide by the EPA's list of banned chemicals.
3. Staff will wear proper PPE for the pesticide being applied.
4. No Pesticide use for aesthetic purposes unless action thresholds for plant health are met or exceeded as determined by a certified/licensed Pesticide applicator. [18]
5. Evaluation of current and future weather conditions to prevent drift.
6. Exceeding label rate of application is a violation of Federal Law.
7. Do not use within 15 feet of waterways; except for control of aquatic invasives where Staff will have an aquatic treatment license.
8. Disposal of infected plants must be conducted in accordance with Maryland Department of Agriculture standards.
9. Least toxic and most environmentally friendly products will be used first.
10. Whenever possible use natural occurring materials—with exception to instances involving threats to plant and public health, as well as public safety.

Public Notification:

Notification will be given on the appropriate City website 48 hours before application. Signs will be posted adjacent to application areas and remain posted for at least 48 hours after application of the pesticide. Notice on signs will include:

1. The company name (City of Greenbelt or vendor).
2. Phone number to contact in case of questions.
3. Date of application.
4. Common name of the pesticide used.

Other Considerations:

In addition to following mandatory guidelines set forth by the MDA regarding pesticide use, Greenbelt Staff have consulted the United States Environmental Protection Agency's list of *Banned or Severely Restricted Pesticides*[19], the City of Takoma Park's *Safe Grow Act of 2013*[20], and the Northeast Organic Farming Association's *Standards for Organic Land Care, Practices for Design and Maintenance of Ecological Landscapes*[21].

Athletic Turf

Managing athletic fields goes beyond cost and includes safety issues and uniform playing conditions.

Athletic Turf:
Athletic and utility-type turfs comprise a significant portion of the landscape in Greenbelt. These areas are key resources to the community as they contribute to open space, provide recreation opportunities, and add value to nearby properties.

Athletic turf requires a unique and deliberate maintenance plan, as it must adhere to safety standards of various sports programs. Greenbelt Staff will implement best management practices provided in the *Maryland Professional Lawn Care Manual*, including:

1. Establish mowing height of 2.5" to 3" to increase turf density.
2. Aerate and overseed fields in Spring and Fall to promote seed germination.

Due to heavy use, athletic turf can lack density and exhibit bare spots which allow weeds to germinate. Invasive species and broadleaf weeds pose significant safety challenges for athletes by eliminating a uniform playing surface. In order to maximize safety for users, Greenbelt staff will administer an Integrated Pest Management (IPM) strategy including:

1. Conduct soil testing as needed to determine turf health.
2. Based on soil results, administer application of blended organic fertilizer or pH products to promote turf growth.
3. Based on field assessment, administer applications of synthetic fertilizer only when the safety of playing field has been compromised.

Turf care is an emerging field of research. The University of Maryland established a Turfgrass Management Program and other scholars are conducting long range studies[22] on sports turf resilience. As laws, trends, and new research evolve, the City will adapt its management strategies to meet community needs.

Watering

Water is a finite resource that must be protected and preserved.

Watering:

Maintaining a beautiful landscape often requires supplemental watering. Since many plants cannot sustain periods of dry weather, it is important to establish a conservation plan that considers amount, frequency, and flow of watering practices.

The use of water as a supplemental resource for plant health will be considered in the following situations:

1. To establish new plantings.
2. To care for annual plantings.

Applications of water will adhere to the following directives:

1. Drip irrigation systems are the preferred use to water annual plantings.
2. New perennials and trees will receive supplemental watering for Season 1, and will be evaluated for watering needs in Season 2.
3. Overhead watering systems are only acceptable when large areas of plants and trees show signs of drought stress. This practice should only be conducted on a short-term basis every 2 weeks until sufficient rainfall or water restrictions are imposed by the State of Maryland.

Runoff:

When rain hits hard surfaces like streets and sidewalks, it channels into storm drains and nearby water sources. This water eventually ends up in the Chesapeake Bay and brings with it debris, chemicals, and other pollutants.

Reducing storm water runoff improves water quality by preventing pollutants from reaching waterways and taking stress off of drainage systems. Considerations for handling runoff in Greenbelt include:

1. Conduct quarterly water sampling as required by the *Maryland Department of Environment's Municipal Separate Storm Sewer System (MS4)* Permits.
2. The use of rain barrels and cisterns that can supply water for annual planting needs.
3. Construction of rain gardens and riparian buffers to filter storm water runoff.
4. When it improves runoff, choosing pervious surfaces—which allow the movement of storm water through the surface—for new Capital Projects.[23]

Trees

Trees are a valuable asset to community landscapes that must be functional, visually pleasing, environmentally friendly, and maintainable.

Trees:

More than 2468 acres, or 62%, of Greenbelt are covered by tree canopy, while an estimated 23% of the City can support additional trees.[24] Urban tree canopy (UTC) provides many benefits—improved water quality, reduced air pollution, enhanced property value, wildlife habitat, control of "heat island effect," and aesthetic benefits.

The City is developing plans to increase canopy coverage and improve maintenance systems of Greenbelt's trees. In 2013, the City conducted a *Street Tree Inventory* that used GIS software to map and retrieve data about right-of-way street trees.[25] The City has adopted an *Urban Forest Master Plan* developed by Davey Resource Group to ensure a safe, attractive, and sustainable tree canopy[26].

The following guidelines will be implemented to protect and enhance tree canopy:

1. All City trees will be regularly monitored and inspected by the City Arborist for symptoms of stress, disease, pests, and physical damage.
2. The *Street Tree Inventory* will be updated to reflect new plantings, hazard trees, and tree removals.
3. No tree will be removed or pruned without permission of the City's Certified Arborist.
4. City trees posing hazard to public safety will be pruned or removed as needed.
5. New trees will be planted in accordance with
    a. *Prince George's County Landscape Manual*.[27]
    b. Greenbelt Advisory Committee on Trees' *Recommended Trees for Use Under Power Lines* and *Recommended Tree Species Appropriate for Greenbelt Parks*.[28]
    c. City of Greenbelt's *Tree Master Plan*.
6. Tree protection zones will be established around new plantings and large established tree areas that require protection from foot and vehicle traffic.

Invasive Plant Species

Invasive plants impede recreational activities and have enormous effects on labor costs and the environment.

Invasive Species:
Invasive species are one of the leading causes of environmental degradation and loss of biological diversity worldwide. As global travel has introduced species to new areas, these non-native plants can be invasive and often alter natural habitats with disastrous consequences on the environment.

Taking action against invasive plants involves significant consideration of available tools and techniques, as well as site conditions and impact on the environment. The goal of invasive management should be to restore the landscape with minimal impact to people, non-target plants, wildlife, and the environment.

The City will control invasive plants utilizing the following directives:

1. Preference given to native plants when establishing new plant beds.
2. Positive identification of invasives listed in the *Plant Invaders of Mid-Atlantic Natural Areas* before treatment is administered. [29]
3. Mechanical removal of invasive plants is the preferred method of control. When it is not feasible due to cost or labor availability, targeted applications of approved herbicides can be used in accordance with Maryland's *Pesticide Applicator's Law*.
4. Maintain participation in *Maryland Invasive Species Council*.[30]

Areas of land that should be prioritized to receive treatment for invasive species include:

1. Tracts of land which are being reforested.
2. Sites where an invasive species appears which was not previously present in Greenbelt.
3. Edges of tracts where invasive species are established or sites that were recently disturbed.
4. Parks and other natural areas with high public visibility and usage.
5. High value wildlife habitats.

Composting & Mulching

Composting and mulching is the single most important action that sustainable gardeners do to create low-maintenance, healthy gardens.

Composting:

Compost is organic matter that has been decomposed and recycled as a fertilizer or soil amendment. Interest in composting programs has grown recently as landfill space decreases. Each American produces on average 2.37 pounds of compostable and recyclable material daily.[31]

Composting keeps excess materials out of landfills, which reduces the amount of methane released into the atmosphere. Some additional benefits of a composting program include:

1. Enriches soil, helping retain moisture and suppressing plant diseases and pests.
2. Reduces the need for fertilizers.
3. Provides cost savings over conventional soils
4. Community engagement in "green" initiatives
5. CO_2 sequestration and methane reduction

The City encourages composting at all scales and supports the following efforts:

1. *Backyard Composting* – Citizens establish compost piles by purchasing compost bin or building an enclosure.
2. *Community Composting* – City partners with community groups to establish compost bins and to help with composting programs. Public Works maintains community compost area where employees contribute lunch scraps.

When applicable, the City will use compostable materials from community composting programs to enhance soils and encourage new plant growth.

Mulching:

The use of mulches in landscape provides several benefits to plants and trees. Mulch can retain 21% more moisture in landscape beds and also keep soil temperature 10° cooler. In addition, mulch can suppress weeds and provide a habitat for soil organisms.

The City recognizes the benefits of mulching and will employ the following directives:

1. Mulch should be used around the base of new plants, shrubs, and trees where applicable.
2. Layering organic mulches (compost, leaves) is suggested in conjunction with wood chips and shredded hardwood.
3. Mulch layers should comply with Prince Georges' County planting standards.[32]
4. Mulch should be raked, re-spread, or removed on an annual basis.

Conclusion

Sustainability is not an exercise in sacrifice today, but represents an opportunity of choice and prosperity for both today and tomorrow.

The *Sustainable Land Care Policy* is the culmination of planning and collaboration between the City, multiple citizen advisory groups, and external partners. The Policy is designed to create attractive landscapes that are in balance with the local environment and require minimal resource inputs. Sustainable land care is "functional, cost-efficient, visually pleasing, environmentally friendly and maintainable."[33]

Sustainable land care is not a new concept. Environmental awareness movements of the 1960s spawned a host of landscape design firms with a focus of "green" and "eco-friendly" practices.[34] Greenbelt has always been at the forefront of environmental sustainability—it was founded as one of three "green" towns planned in 1935 under the United States Resettlement Administration (along with Greendale, Wisconsin and Greenhills, Ohio).[35]

Greenbelt is fortunate to benefit from State leadership, as Maryland is pioneering efforts to achieve sustainability. As the Department of Natural Resources has stated, "a sustainable future is one in which our children have options, are able to meet their needs, and enjoy prosperity. What we do or fail to do today will affect the ability of our children to make a sustainable future for their children."[36]

The City of Greenbelt is committed to doing its part to realize these opportunities. The *Sustainable Land Care Policy* is the roadmap to achieving a sustainable future. As a living and updatable document, the City looks forward to reviewing the directives contained within on an as needed basis.

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