

TURF GRASS MANAGEMENT PLAN



**City of Washington
Parks and Recreation Department
2012**

INTRODUCTION

One of the missions of the City should be to maintain public policies that address turf grass management within its jurisdiction. In order to consistently carry out its mission and serve the needs of the people, the City has developed this “Turf Grass Management Plan” to provide overall direction to the City in the management of turf grasses. This Plan strives to balance the duality of providing for parks and recreation in all park areas while responsibly managing natural resources such as vegetation, soil, and water. The “Turf Grass Management Plan” will provide sound direction in the maintenance of parks and public turf grass areas to ensure optimum benefits to the environment and the community.

Turf grass provides a forgiving and resilient surface for many recreational activities and is the traditional “green carpet” visitor’s associate with parks. Because turf grass varies substantially in use, so do turf management practices. Appropriate management ensures high quality turf grass where it is needed such as on athletic fields and golf courses and that the designed use of a site is met.

Level of visibility and site use dictate maintenance standards for turf grass areas. Even within the same park, maintenance techniques can differ for formal, athletic, and high-traffic areas as opposed to remote areas that may remain informal and natural. For that reason, turf grass Best Maintenance Practices (BMP’s) are tailored to the specific requirements of the turf grass and site goals.

BACKGROUND

The parks and recreation system offers visitors a wide variety of turf grasses, including lawns (both formal and informal), athletic fields, driving range, meadows and other kinds of turf. Each type of turf grass requires a separate best management practices, the intensity of management ranges for very highly maintained athletic field turf grass to meadow and bank areas, and prairies that may get mown 1-2 times a year as a fire prevention measure.

Turf grasses can generally be divided into two (2) main categories in Missouri:

- **Warm Season Grasses** – Bermuda, Zoysia, and Buffalo
- **Cool Season Grasses** - Fescue, Bluegrass, Rye, and Bentgrass

Existing Site/Environmental Conditions

Site microclimate considerations are taken into account when planning a new planting or renovating an existing one. The following factors must be weighed:

- **Current Landscape Condition.** The condition of current turf grass is a good indicator of existing cultural conditions. Compaction, low nutrients, and types of pest populations determine renovation and turf grass selection options. This is particularly true of soil-borne pathogens. Selecting resistant turf grass is a must. It is also recommended to select turf grasses that do not require large amounts of fertilizers or highly specialized care.
- **Soil Type and Condition.** Soil may require amendments to improve drainage or water-holding capacity. Heavy clay or very sandy soils may be improved if desired, but appropriate turf grass selection is vital to the success of the planting.
- **Drainage.** Irrigation and drainage conditions must be assessed and any improvements included in the design process. Run-off should be eliminated as much as possible.
- **Cultural Conditions.** Cultural conditions such as exposure to sunlight and reflected light and heat, wind, and rainfall apply to turf grass selection and irrigation installation.
- **Species Diversity.** Species diversity offers a longer season of interest. Monocultures can be more susceptible to total failure in case of insect or disease problems.

Construction Issues

- Turf grass areas should be constructed with a minimum slope of 1% to promote surface drainage and a maximum of 15% to allow riding mowers to safely access areas.
- Whenever possible, the existing soil should be amended with sand and 6" of topsoil to provide a drier surface area. Dry areas allow easier and earlier (in the mowing season) maintenance.

- Trees, signposts, benches and other park amenities should be carefully placed in turf areas to reduce the need for hand trimming. If possible, these amenities should have the turf immediately surrounding them removed (such as a tree ring) to protect the amenity and to facilitate more efficient turf care.
- Whenever possible, seeding should occur during the spring or fall months for Cool Season Grasses when temperatures are generally between 50-70 degrees, and spring to summer months for Warm Season Grasses when temperatures are generally between 70-80 degrees, to insure maximum germination.
- Design a natural buffer area between turf grass and water bodies or drainage systems. If possible, buffer should be at least 25-50 feet.

Grass Selection

Selection of turf grass species is based on site conditions, expected usage, and maintenance standards.

- Sites with optimum growing conditions and high maintenance standards can be seeded with blends of several species (Cool Season – Fescues (5-way blend of Turf Type) Bluegrass, and Perennial Rye. Warm Season – Bermuda and Zoysia). These are usually high traffic parks, athletic fields, lawns etc.
- Sites with less than optimum growing conditions and low maintenance standards are seeded with blends of several species (Cool Season – Fescues (Kentucky-31 or Turf Type) and Perennial Rye. Warm Season – Buffalo and Zoysia). These are usually low traffic areas such as Rights-of-ways, Conservation areas, and low maintenance areas of a park.
- Sites with less than optimum growing conditions, medium to low maintenance standards, poor drainage, and limited fertilizer and water applications can be seeded with blends of several species (Cool Season - Kentucky-31 Fescue. Warm Season – Buffalo). These areas are usually low traffic areas such as Conservation/Nature areas and Drainage Ditches or Swales.
- Sites with partial or full shade can be seeded with blends of several species (Cool Season – Creeping Red Fescue, Turf Type Fescue and Perennial Rye). These can either be sites with high or low maintenance standards but happen to be located in areas with little to very little sunlight.

BEST MANAGEMENT PRACTICES (BMP's)

The best management practices described in this chapter is applicable to parks, city buildings, athletic fields, meadows, etc. Site standards for turf grass vary by landscape classification. Landscape classifications include; prominent, general, and non-irrigated lawns, steep slopes, meadows, soil and sand-based athletic fields, and bathing beaches.

Mowing

- Frequency. The importance of regular mowing to promote healthy turf cannot be over-emphasized. Growth should be monitored and frequency increased to avoid removing more than 1/3 of the leaf blades.

The following is the basic standard for mowing frequency for Cool Season Grasses:

March – October	Weekly
November	Bi-Weekly
December – February	As needed

The following is the basic standard for mowing frequency for Warm Season Grasses:

May - September	2-3 times per Week
October- April	As needed

- Cutting Height. Mowing height may vary from park to park and for Cool Season Grasses and Warm Season Grasses. Generally, Cool Season Grasses should be mowed between 3” to 5”, with Warm Season Grasses being between ½” to 2”.
- Mulch Mowing. Grass clippings should rarely be removed from mowed turf areas. The plant nutrients and organic material they contain play an important role in developing a healthy, productive environment for root growth.
 - Mowing patterns should be alternated to avoid ruts and compaction from the wheels.
 - Avoid driving on frozen turf.

- Avoid driving on wet ground where ruts will remain. Walk the site during wet conditions to do a visual inspection.
- Mowing equipment must be maintained regularly, especially sharpening and adjusting of cutting edges.
- Ensure that grass clippings do not have the potential to be washed into stream or drainage systems, which can degrade water quality.

Trimming

- Trimming shall be performed by walk behind mowers and line trimmers in areas that cannot be accessed by riding mowers.
- Trimming shall be coordinated to coincide with other mowing activities on the site.

Edging

- Edging shall be performed a minimum of 2 to 4 times per year, depending on the maintenance standard for the site. Turf grass edging is done to give a finished look to lawn areas that border paved surfaces or planting areas.
- At high visibility locations, edging shall be performed more frequently.
- Edging should be performed with metal bladed equipment, whenever possible, to prevent damaging turf edges.

Irrigation

- Site conditions such as soil type and slope, exposure and moisture requirements of grass dictate both frequency and duration of application.
- Weather conditions, such as temperature and rainfall, require monitoring and response. Generally, turf grass requires at least 1 inch of water per week. Drought tolerant grasses, once established, may need less.
- Infrequent deep watering is preferable. Avoid creating runoff.

- Consider pedestrian access, park usage, and available personnel when establishing irrigation schedules.
- Be sure to begin watering early enough in the spring to prevent plant stress and hydrophobic soil conditions. Continue irrigating until consistent fall rains begin.
- Visually test and monitor the system weekly.

Fertilizing

Fertilizing, the use of organic or inorganic compounds, shall be tailored to specific requirements for grasses:

- **Formula.** Select a formulation that is best for the soil type and time of year. Cold weather slows the activity of soil microbes that make nutrients available to the grass. Turf grass requires nitrogen, phosphorous, potassium and other nutrients to optimize growth. Fertilizer shall be a slow release compound of Nitrogen (N), Iron (Fe), and Potassium (K), the ratio dependent upon the time of year.
- **Nutrients.** Nutrient requirements differ according to grass type and the desired performance of a grass. Too much nitrogen can cause excess growth, which will be more susceptible to insect and disease damage.
- **Application Timing.** Timing application to the biological cycle of the grass is important in maintaining optimum growth. Each application should not exceed 1 lb. of N per 1000 square feet. Applications in very hot weather shall be avoided.
- **Micronutrients.** Micronutrients are also important for turf grass health. It is best to test the soil to determine existing levels of these nutrients because an imbalance can harm plants.
- **Soil pH.** The pH of the soil will determine whether to use an acid or base formulation of fertilizer, as well as the need for lime applications. Always test for pH before applying any fertilizer or lime. Fertilized turf shall be pH tested on a 3-year cycle.

- **Site-specific fertilizer restrictions** must be observed. Site-specific cautions include restricting use of fertilizer on turf areas adjacent to streams and wetlands and prohibiting phosphorus within 25 ft. of lakes and waterways.

Aeration

- Aeration of high visible locations shall be done 2-3 times per year using .75-inch hollow or solid tines.
 - Best periods for Cool Season Grasses: March, April, September
 - Best periods for Warm Season Grasses: June, July, August
 - Technique: make at least 2 passes at 90-degree angles.
- Areas with drainage problems should be deep-tine aerified 1-2 times per year using 1" by 6" hollow or solid tines.

Top Dressing

- General-use-top-dressing mix shall be used. Top-dressing should be primarily sand with minimum amounts of organic matter.
 - Frequency: most effective applied lightly and frequently.
 - Each application should be about ¼ inch.

Overseeding

- Heavy impacted areas should be over-seeded at least once per year.
 - Best practice for Cool Season Grasses is to over-seed in the fall and slit seed in the spring.
 - Best practice for Warm Season Grasses is to over-seed or slit-seed in the late spring to early summer (May/June).
 - Overseed rate is approximately 5 lbs/1000 sq.ft.

INTEGRATED PEST MANAGEMENT

The City of Washington's Parks & Recreation System maintains a variety of turf grass types. These include park lawn areas (both formal and informal), athletic fields,

meadow areas and other turf grass types. Each of these turf grass types has different pest management challenges, and practices may vary accordingly:

1. Pest Tolerance Thresholds

- Some level of weed, insect, and disease pests are tolerated in general park lawn areas.
- Pests in highly maintained turf grass such as athletic fields and other high-visibility/high-use areas are generally controlled through good turf grass cultural practices.
- Because of the unique conditions present on athletic fields, a variety of pest control measures are used, including mechanical, cultural and chemical.

2. Pest Management Strategies

- Broadleaf Weeds – Weeds in turf grass are tolerated, to some level, with the exception of athletic field turf grass and a few high-visibility park turf grass areas. When control is necessary, the primary method is through the following cultural practices:
 - Careful monitoring of watering practices
 - Fertilization
 - Aeration
 - Top-dressing
 - Over-seeding

By performing these cultural practices, park turf grass is made healthier and better able to compete with various broadleaf weeds. Chemical weed control will be used for controlling particularly difficult weeds in high-visibility turf grass areas.

- In these limited situations the least toxic, least residual pesticide should be used for spot treatments.
- General broadcast treatments should generally be avoided.

- Timing of such applications should be made to avoid contact with the public to the extent possible.
- Posting of the site that has been treated will meet or exceed legal requirements.

Maintenance for the City's athletic fields generally does have to control for broadleaf weeds. This control is done through cultural practices and spot application of carefully selected herbicides.

- Insect Control - The only real insect pest currently of significance for turf grass in the Washington area is the grub worm.
 - Chemical control is used in limited circumstances to turf grass of very high visibility and value such as athletic fields and selected high-visibility/high-use park turf grass.
 - Any chemical applications should be treatments directed specifically at the turf grass areas containing the pest.
 - The preferred initial choice for application in high-use areas is the "safest" or least toxic product available.
- Disease Control General Park Turf Grass – Disease in general park turf grass is typically tolerated and not actively controlled.
 - In high-use/high visibility park turf grass areas, disease will be controlled to a considerable degree by performing sound cultural practices.
 - Pesticides may be used to control disease in park turf grass areas.
- Athletic Field Turf – Because turf grass disease can be a significant problem on athletic fields, it must be controlled to preserve the function of this asset. Athletic Field turf grass must perform under extreme conditions of maintenance and use. These conditions make athletic turf grass more susceptible to disease than general park turf grass.
 - Athletic Field turf grass disease is controlled through good cultural practice to the extent possible.

- Certain diseases are controlled through the application of an appropriate fungicide.
- When used, fungicides are applied to the diseased turf grass only.
- The least toxic and still effective products should be used.
- The fungicide used should be rotated yearly to reduce the chance of the turf grass disease developing a resistance to the chemical control.
- Grass Trimming Abatement – The control of grass growing along fence lines and around trees, bollards, posts and other landscape features is a regular maintenance activity that helps preserve the asset by allowing large riding lawn mowers to steer clear of objects. This is especially important around trees where impact from mower damage can easily lead to tree loss. At the same time, keeping this grass controlled allows Parks to present parks that appear clean and well kept. This grooming affects how the public uses our facilities. Well-maintained parks are subject to less vandalism and related misuse. The following are BMP's for grass trimming:
 - *String trimmers or push mowers.* The grass is trimmed using gas-powered string trimmers or push-type lawn mowers. This labor-intensive practice is costly and produces noise and air pollution.
 - *Herbicide.* Applications are performed annually or semi-annually, to provide pre-emergent control of weed and grass seed not yet germinated in tree mulch rings, plant beds and similar areas.
 - *Concrete mow strips.* As resources are available, it is sometimes possible to provide a “mow strip” of concrete or a similar low maintenance product around some landscape features to eliminate the need for grass trimming. This control option is costly and doesn't work in all situations.

TRAINING

- All park maintenance field staff should have training in basic turf grass management.
- All park maintenance field staff should have specific training regarding mowing heights and patterns.