I. Maintenance Plan

DPR maintains 96+ acres of park land in addition to athletic fields and open space associated with the Town's schools. Similar to other parks and recreation entities throughout the country a large portion of DPR's operating expenses are dedicated to maintenance. DPR has annual budget of approximately $1,200,000, of which approximately $800,000 is allocated through the Town of Dedham. This chapter outlines a plan for a tiered approach to the maintenance of parks spaces and amenities carefully considering the most efficient use of capital and labor resources. Other budgetary responsibilities of DPR include:

- Operating and maintaining indoor facilities at the Dolan Recreation Center.
- Budgetary responsibility for their administrative staff.
- Organization of major Town-wide special events.
- Operate, maintain or manage trails within parks.
- Operate, maintain or manage special purpose parks and open spaces.
- Administer or manage tournament/event-quality outdoor sports fields.
- Operate Manage and maintain an indoor aquatic facility.

The average annual operating expenses for a parks and recreation agency based on the "2017 NRPA Agency Performance Review" is $77.32 per capita. The typical parks and recreation agency generates approximately $19.04 per capita and has a staff average of 7.3 full time employees for every 10,000 residents.

DPR also maintains the follow equipment used for the maintenance of park facilities:

- Sit on lawn mowers (2)
- Dump trucks (3)
- Pickup trucks (2)
- Front end loaders (2) (Kaboda and Ford)
- Aerator (1)
- Small aerator (1)
- Push mowers (5)
- Sand pro (1)
- Weed wackers (4)
- Leaf blowers (2)
- Slice seeder small (1)
- Snow blower (1)

The maintenance plan will outline a maintenance approach under the following five divisions: Turfgrass, Trees & Landscaped Areas, Skinned Infields, Synthetic Turf, Walking Trails, and Facilities & Site Amenities.

Turfgrass

Table 16. Level 1 Turf Grass Maintenance (Low use general open space)

Mowing and Trim	Satisfactory turf coverage will be mowed and trimmed as needed to maintain a height-of-cut (HOC) between 2.5" and 4". Clippings will be side discharged or mulched into the turf canopy.
Seeding	Thin or bare areas deemed unacceptable will be documented and addressed by priority. Renovation will consist of soil cultivation, seeding, and fertilization using a "starter" type product. Methods of renovation will be determined by site restrictions, equipment, labor, and material availability.
Herbicides	Obstructions requiring hand trim work (such as: fences, permanent structures, and other immovable objects) will be assessed and treated with non-selective herbicides to reduce labor inputs.
PGR's	Plant growth regulators (PGR's) may be utilized on turf areas to reduce labor requirements.

Table 17. Level 2 Turf Grass (General open space non- athletic use)

Mowing and Trim	Satisfactory turf coverage will be mowed and trimmed as needed to maintain a height-of-cut (HOC) between 2.0" and 3.5". Clippings will be side discharged or mulched into the turf canopy.
Seeding	Thin or bare areas deemed unacceptable will be documented and addressed by priority. Renovation will consist of soil cultivation, seeding, and fertilization using a "starter" type product. Methods of renovation will be determined by site restrictions, equipment, labor, and material availability.
Cultivation	Aerification will be done once annually or as equipment and labor are available. Preferred equipment will be the ground driven aerifier with a ¾-inch dual hollow tine set-up. Seeding operations should be coordinated with aerification to maximize the value of both processes.
Fertilization	Turf will receive one annual application of fertilizer in the autumn of each year that consists of at least 1 lb of actual nitrogen per thousand square feet. Fertilizer products having 30% to 50%+ slow release properties will be favored with the intention of building a "bank" of available nutrients. Additional fertilizer inputs will be driven by labor and resource availability.
Herbicides	Obstructions requiring hand trim work (such as: fences, permanent structures, and other immovable objects) will be assessed and treated with non-selective herbicides to reduce labor inputs.
PGR's	Plant growth regulators (PGR's) may be utilized on turf areas to reduce labor requirements.

Table 18. Level 3 Turf Grass Maintenance (Non-Irrigated Athletic Open Space)

Mowing and Trim	Turf will be mowed and trimmed as needed and no less than once weekly to maintain a HOC between 1.5 inches and 3.0 inches to be determined by the Grounds Manager. Clippings will be side discharged or mulched into the turf canopy.
Seeding	Seeding will be done as needed to maintain an acceptable turf stand. The preference will be a full-scale, fall overseeding in conjunction with hollow tine aerification. Spring and summer seeding will be as needed and will be paired with some form of cultivation to maximize the efficacy of the seeding operation. Thinning or bare areas will be treated as a priority. Sod will be utilized as a last resort in areas where excessive use prevents establishment of turf from seed.
Cultivation	Aerification will be performed at least once and preferably twice annually with the ground driven aerifier. A ¾ inch dual hollow tine set-up and 2X pattern will achieve 12% surface disruption per operation. Aerification and seeding should be combined whenever possible.
Fertilization	Fertilizer will be applied to achieve a minimum annual input of four pounds of actual nitrogen per 1,000 square feet. Fertilizer products having 30% to 50%+ slow release properties will be favored with the intention of building a "bank" of available nutrients. Macro and micro nutrient inputs will be based in part on soil and water test results. Additional fertility inputs will be driven by labor and resources.
Irrigation	Water will be applied as needed to supplement natural rainfall with a target amount of one inch per week. The policy will favor deep and infrequent applications. Level three areas do not have in-ground irrigation systems. Rain Train style units will be utilized where available.
Herbicides	Preemergent herbicides will be applied in the spring as dictated by soil temperatures and germination characteristics of crabgrass and other grassy weeds. Broadleaf weeds will be treated one or two times annually as weather and labor permit. The three-year plan is to reduce broadleaf weeds to an aesthetically acceptable level and reduce herbicide inputs to one annual "spot treatment" type application. Obstructions requiring hand trim work (such as: fences, permanent structures, and other immovable objects) will be assessed and treated with non-selective herbicides to reduce labor inputs.
PGR's	Plant growth regulators (PGR's) may be utilized on turf areas to reduce labor requirements.
Insecticides	One application annually to prevent all species of white grubs. Additional inputs needed to control surface feeding insects will be evaluated to assess potential damage and treated accordingly.
Soil and Water Testing	Soil and water tests will be taken once annually or at a reasonable interval to be determined by the Grounds Manager. Immobile nutrients such as phosphorous, calcium and magnesium will be applied at the time of aerification and rates will be driven by soil and water test results. Soluble products like gypsum, potassium, sulfur and any recommended micronutrients will be applied during the course of normal fertilization operations.

Table 19. Level 4 Turf Grass Maintenance (Irrigated Dedicated Athletic Space)

Mowing and Trim	Turf will be mowed and trimmed as needed and no less than2 times weekly to maintain a HOC between 1.5" and 2.5" to be determined by the Grounds Manager. Clippings will be side discharged or mulched into the turf canopy.
Seeding	Seeding will be done as needed to maintain an acceptable turf stand. The preference will be a full-scale, fall overseeding in conjunction with hollow tine aerification. Spring and summer seeding will be as needed and will be paired with some form of cultivation to maximize the efficacy of the seeding operation. Thinning or bare areas will be treated as a priority. Pregerminated seed may be utilized when appropriate for quick coverage. Sod will be utilized as a last resort in areas where excessive use prevents establishment of turf from seed.
Cultivation	Aerification will be performed at least once and preferably twice annually with the ground driven aerifier. A ¾" dual hollow tine set-up and 2X pattern will achieve 12% surface disruption per operation. Aerification and seeding should be combined whenever possible. Cultivation with solid tines, knives, or other equipment will be scheduled as need by the Grounds Manager to aid in seeding, topdressing, to achieve im- proved soil structure, reduced compaction and promote gas exchange within the root zone.
Fertilization	Fertilizer will be applied to achieve a minimum annual input of 4.9 pounds of actual nitrogen per thousand square feet. Fertilizer products having 30% to 50%+ slow release properties will be favored with the intention of building a "bank" of available nutrients. Macro and micro nutrient inputs will be based in part on soil and water test results. Additional fertility inputs will be driven by labor and resources.
Irrigation	Level 4 areas have in-ground irrigation systems run by a central controller. Water will be applied on an as needed basis with an emphasis placed on maintaining the driest conditions possible to support the turfgrass stand. Reduced length of turfgrass wetness will be the primary goal when programming. Nozzle precipitation rates will determine run times. Syringing will be per- formed in the afternoons if turfgrass stands display signs of wilt. All efforts will be made to coordinate notification with appropriate departments and organizations when syringing is necessary.
Herbicides	Pre-emergent herbicides will be applied in the spring as dictated by soil temperatures and germination characteristics of crabgrass and other grassy weeds. Broadleaf weeds will be treated one or two times annually as weather and labor permit. The three-year plan is to reduce broadleaf weeds to an aesthetically acceptable level and reduce herbicide inputs to one annual "spot treatment" type application. Obstructions requiring hand trim work (such as: fences, permanent structures, and other immovable objects) will be assessed and treated with non-selective herbicides to reduce labor inputs.

Plant growth regulators (PGR's)	PGR's may be utilized on turf areas to reduce labor requirements.
Insecticides	Insecticides will be applied preventatively with an emphasis placed on low toxicity products. The organophosphate family of insecticides will be avoided. Product selection and use will be at the discretion of the Grounds Manager.
Soil and Water Testing	Soil and water tests will be taken once annually or at a reasonable interval to be determined by the Grounds Manager. Immobile nutrients such as phosphorous, calcium and magnesium will be applied at the time of aerification and rates will be driven by soil and water test results. Soluble products like gypsum, potassium, sulfur and any recommended micronutrients will be applied during the course of normal fertilization operations.
Topdressing	Topdressing will be implemented as aggressively as possible. Targeted annual depth will be ½ inch of a sand based material applied incrementally not to exceed 1/8 inch per application. Sand particle size should fall within the medium specifications not to exceed one mm in size. Organic matter should compose at least 20% of the mix. Topdressing will be combined with cultivation operations whenever possible.

The average cost to maintain a Level 4 USGA sand-based rectangular multi-use field (Avery School) mowings twice weekly for 33 weeks, including:

- Cultivation
- Watering
- Overseeding
- Chemical Application
- Topdressing
- Game Prep

Cost $0.22/sf

The average cost to maintain a Level 3 rectangular multi-use field of approximately 70,000 square feet including mowings 1.5 times average weekly for 33 weeks, including:

- Cultivation
- Watering
- Overseeding
- Chemical Application
- Game Prep

Cost $0.18/sf

Skinned Infields

Skinned infields require a significant amount of labor to keep them safe and playable. Approximately 75% of the game of softball or baseball is played on the infield and as players become older and the game gets faster it becomes more crucial that an infield is properly maintained to prevent injury. It is important to know a field's composition. ASTM publishes a range for standard infield mix composition. It is recommended that all DPR skinned infields be made up of approximately 70% sand and 30% silt/clay with a silt-to-clay ratio of 0.5-1.0.

Management of multiple types of infield mixes across the various parks and schools makes it difficult to maintain consistent playing surfaces. The most crucial part to maintaining an infield mix is moisture which is directly correlated to a skinned infield's composition. Hot weather or rain can adversely affect moisture in the field. DPR will work with local organizations to develop a tarp policy as part of an agreement for use of the fields. Nail dragging is a vital tool for maintaining a field's surface as it removes imperfections and help create a firm surface. Nail dragging should be done as often as resources allow, a minimum of twice weekly for higher level fields and once a week for lower level fields. Finish or smooth dragging should be done after nail dragging. Smooth drag patterns should be in the opposite direction of nail drag patterns. Additional smooth dragging can be done as necessary by walking with a smooth drag.

DPR should work with local organizations using the fields to develop a field policy that requires mandatory performance of daily tasks to keep the field in good playing condition. Tasks should include position maintenance, mound and batter's box maintenance after each practice or event to prevent low spots or excessive degradation of the infield. This type of field policy create a sense of pride and ownership by getting the community involved, including athletes, parents, booster club members, etc.

- Have players work on their specific areas (pitchers on mound, infielders on lips, etc) for greater connection and sense of ownership.
- Take advantage of work-study programs.

The primary role of DPR management and staff will be to train others to properly perform daily tasks that provide good playing conditions without detrimental effects to the fields and to provide the maintenance outlined in the following table.

Table 20. Skinned Infields Maintenance

Debris Removal	Remove debris such as rocks, grass clippings, trash, weeds, etc. Remove chalk down the base paths and around home plate with a flat square shovel. This helps prevent a 'build-up' or hump that can occur down the middle of the baseline and around the home plate area.
Water	Water is very important in an infield mix. Infield should maintain a cork- board effect or cleat in cleat out. Use the "key test". Use a spare key, insert it into the infield dirt. The key should go through the infield dirt with relative ease and when pulled out should not break apart; this will make for a clean spike mark as well. Repeat this method randomly throughout the skinned area in order to gauge proper moisture.

Lip Maintenance	Inspect for clay or conditioner in lips (where grass meets dirt) of the skinned area where dirt can accumulate. If there is a build-up present, use a plastic fan rake, pine broom and/or blast the dirt back with a water hose onto the infield when really bad.
Dragging	Nail Drag two times a week but only when the infield has the proper moisture. Nail Drag in different directions to avoid waves or ruts. Stay at least one inch away from all edges. Mat drag or finish drag two times weekly. Drag in 9'-10' circles from third to first vary starting locations each time you drag at a speed not faster than you can walk. Mat drag base paths by hand in the direction of the base paths and never across the base path. Always carry drags off the field.
Edging	Trim all infield edges once a month. After trimming roll all edges and base- paths.
Mounds	Mound maintenance should be done daily. Holes in the mounds should be filled with proper mound clay. Remove surface material down to the clay product. Scarify wet and add clay in lifts tamping to compact product. Cover clay product with between one half and one inch of infield mix and cover with tarp.
Testing	Infield make up should be tested every other year. Consistency of products should be maintained for all infields across DPR. Infield mix should be between 60 and 70% sand and 30-40% clay (adjust to best maintain moisture levels.) Infield mix should have a silt to clay ratio of 0.5-1.0
Season End	Remove all conditioner products by sweeping into piles and placing in five gal buckets and store in cool dry area.
Bi-annual	Infields should be laser graded on a bi-annual basis. This is preventative maintenance to keep from infield replacement. Infield mix should added as necessary and tilled into the full profile to create a good bond. After infield is laser graded it should be rolled and surveyed for records and reestablishment.

The average annual cost to maintain a softball field including mowing two times average weekly for 33 weeks:

- Cultivation
- Watering
- Overseeding
- Chemical Application
- Game Prep
- Skin and Mound Maintenance

Cost $0.36/sf

The average annual cost to maintain a baseball field including mowing two times average weekly for 33 weeks

- Cultivation
- Watering
- Overseeding
- Chemical Application
- Game Prep
- Skin and Mound Maintenance

Cost $0.20/sf

Synthetic Turf

Synthetic turf is relatively low maintenance compared to high end natural grass fields, but synthetic turf fields are not "NO" maintenance. All synthetic turf fields should be groomed every 100 hours of use. This includes brooming, using a magnet to pick up any small metal objects, and use of a sweeper and litter catcher to remove debris. High use areas should be checked daily for infill depth and migration, these areas are often the first to degrade and can void a warranty if they are not cared for as outlined by the synthetic turf manufacturer. Seams and inlays should be checked every time a field is groomed these areas are also prone to degradation over time but the repairs can be simple if caught early. Annual maintenance, inspection and testing done by the manufacturer or professional service is recommended, it often prolongs the life of the turf and should be built into the annual budget for each field.

Table 21. Synthetic Turf Maintenance

Grooming	Fields should be groomed every 100 hours of use or as directed in your synthetic turf maintenance manual.
Infill	Depth of infill should be measured in all high traffic and high wear areas every day when fields are used on a regular basis. Add infill and brush in by hand or with a broom to maintain appropriate depth.
Annual Maintenance	Annual Maintenance shall be contracted to occur prior to the fall sports season for all synthetic turf fields. Annual maintenance includes: • Deep Grooming • Deep Cleaning • Line Repair • Seam Repair • Infill Replenishment • Line Striping Magnetic • Sweeping • Brushing • G-Max / HIC Testing

The average annual cost to maintain a Synthetic turf field including grooming weekly for 33 weeks,

- Adding Infill
- Seam Repair
- Game Prep
- Annual Maintenance

Total = $8,000 including labor and supplies (does not include electricity for sports lighting)
*Note this is an average and costs are often heavier on the back end of a synthetic turf field's life cycle.

Trees and Landscape

The intent of providing a maintenance plan for tree and landscape areas is the beautification of public spaces throughout Dedham. Proper plant selection, pruning, fertilization, weed control, and water management will all result in plant material and overall landscaping that are aesthetically pleasing.

Table 22. Trees and Landscape Maintenance.

Plant Selection	The addition of new plant material will be approached with site characteristics in mind first. Both woody and herbaceous plants will thrive and require the least amount of additional inputs when located appropriately on site. Plant material will be chosen to match or compliment the original design of existing landscaped areas when rehabilitation or expansions are undertaken. When a master plan exists, choices will be made from the recommendations of the landscape architect. Plant selection should be native and drought tolerant with exceptions only being made for specific programming functions.
Pruning and Removal	Best Practices as outlined by the International Society of Arborists (ISA) and other resources deemed as "expert" will govern the techniques and practices employed. It is expected that the grounds management workers will have practical knowledge of these practices and techniques. An inventory and assessment of trees was performed in 2006 for eight parks in Dedham (Appendix D) and data on the condition of trees was delivered to the Town in GIS files. The report includes recommendations for tree and landscape maintenance including, but not limited to, the removal or pruning of trees, routine mulching of beds, removal of invasive species, and poison ivy management. This report can be used as an implementation plan for the immediate future. The Town should work to both expand the scope of the report to other parks and to routinely update the GIS documentation.
Bed Maintenance	Hard edging will be performed once annually with soft edging to follow as needed throughout the season to maintain a defined edge. Mulch or other treatments may be applied to cover the soil for aesthetic and protective purposes. Mulching will take place once annually in the spring. Cleaning, raking, or the addition of a mulch material will take place at the discretion of the Grounds Manager to maintain a neat appearance.

Trails

DPR currently maintains a small amount of hard surface trails with-in its current park system. However walking trails were one of the most popular forms of recreation and requested amenities on the public survey. The following table represents a preliminary plan for maintenance accommodations of trails in the future of Dedham's park system.

The average annual cost for trail maintenance is between $2,500 and $6,000 per mile. Variations in surfacing, width, and areas with structures such as bridges, walls, drainage utilities, etc. make up the largest differences in cost.

Table 23. Trails Maintenance

Aggregate Trails	Trails will be topdressed and compacted with matching material to maintain a surface free of ruts or other tripping hazards on an annual basis in the spring. Stabilization of surface material may be achieved using various urethane based products in areas that consistently experience water erosion.
Hard Surface Trails	Hard surface trails will be blown or swept free of debris as necessary to maintain a surface free of tripping hazards. Condition of the hard surface material will be assessed during weekly and monthly inspections and deficiencies will be reported to the necessary departments to schedule for repair or replacement. DPR shall remove snow from all hard surface trails with its parks.