

Pesticide-free Turf Management Pilot Project: Initial Assessment

The initial walk-over assessment for this project was conducted at all three locations (School House Park, Buckley Park and the Santa Monica medians from Silver Spring Drive to Montclair) on May 5, 2007. Our criteria included a visual assessment of overall turf conditions including turf thickness, presence of bare patches/damage, weed infestation, and evidence of compaction, as well as noting the quantities and types of weeds present in areas most likely to receive heavy traffic, snow compaction, etc. The attached photos were taken specifically to provide a general visual of what each area looked like at the onset of the program as well as to note any major plow and tire damage which is not considered the responsibility of the pilot project volunteers to repair.

General Weed Survey Methodology Applied to Three Pilot Areas

Each plot was generally described, photographed twice and then counted for dandelions using the following method: Two counts were taken for each plot and if the second count fell within ten percent of the first, then the first count was used. If the second count did not fall within ten percent of the first, then the plot was recounted following the method described above. Generally, no more than two counts were needed, and the counts usually fell within 5% of each other.

School House Park Walk-over Assessment

Although last year's over-seeding has increased the amount of grass at this park, there is a large amount of clover throughout the entire grassy area and heavy amounts of prostrate knotweed, dandelions and plantain around the edges near the sidewalks, particularly along the thin strip of turf between the sidewalk and road. The southern end of the strip between the sidewalk and Marlborough is particularly weedy which is a reflection of the heavy foot traffic, and subsequent soil compaction, from people getting in and out of their cars to go to the park and the library across the street.

There are numerous mature trees at this park. Their large root systems have created very shallow to no soil depth around their bases which inhibits turf growth. There is a cluster of three large hardwoods toward the south end of the park whose leaf canopies and extensive root systems make turf growth more difficult. The area beneath them is more dirt, clover and weeds than grass. The area just south of the flower beds also has a cluster of hardwoods and spruce trees, but the turf is quite thick with very few weeds. The southwest corner of the park has a very large hardwood with a massive root system. Short of removing this tree and repairing the area, there is not enough topsoil for thick grass growth at any time. Tire damage was noted on the area between the road and sidewalk at both the south end of the park and the north end of the park.

Light Conditions

The tree canopy creates a substantial amount of shade at School House Park and should be considered when choosing types of grass seed to apply and where to apply it.

Usage Observations

School House Park is highly used given its very small size. The turf area is frequently used for recreational activities such as baseball, football, frisbee, and soccer. Due to its small size, it is not used by organized sports clubs for practices or games but still receives wear and tear from resident usage and organized activities such as summer ice cream socials, band concerts and the annual fall Pumpkin Display. Given the park's heavy usage and presence of weeds that thrive in anaerobic conditions, soil compaction is an ongoing issue for this park.

Core Soil Sample Results

The average turf root depth at School House Park was between one to two inches. The ideal range for healthy turf root depth is between four to ten inches.

School House Park Weed Count Survey

Assessment: Assessed four plots, each measuring 16 feet by the length of the two sidewalk squares used to mark the plots.

Plot One (southwestern corner of park): Taproot weeds (mainly prostrate knotweed) too numerous to count with many bare spots including a 16 x 7 foot bare area; 23 dandelions

Plot Two (western border/Idlewild side): Approximately 80% clover and prostrate knotweed; 20 dandelions

Plot Three (middle of park): About 80% clover; nine dandelions

Plot Four (eastern border/Marlborough side of park): Heavy clover and prostrate knotweed; 58 dandelions

School House Park Soil Test Results

Organic matter: Low at 4.2% (optimal range 5 - 10%)

pH: Slightly high at 7.2 (optimal range for turf grass 6.0 – 7.0)

Phosphorous: Two times recommended level (should be 0.4% of total nutrients)

Potassium: Two times recommended level (should be 1.1% of total nutrients)

Calcium to magnesium ratio: High at 10 to 1 (ideal is 7 parts calcium to 1 part magnesium)

Soil bacterial level: Very low at 66 micrograms per gram (100 to 300 is expected range - will benefit from compost tea applications)

Buckley Park Walk-over Assessment

Our initial observations of Buckley Park were that the turf is in overall good condition. The areas with the highest concentrations of weeds were, like at School House Park, the areas receiving the most foot traffic along the edges of the sidewalks on Lake Drive and Palisades as well as the northern part of the park where runners and walkers routinely cut across the turf as they turn onto or come from Palisades. The northern edge of the park also has numerous mature trees with large root systems, making turf growth more difficult.

Buckley Park Light Conditions

The northern, northeastern and southeastern areas of the park have clusters of mature trees with large leaf canopies. The central eastern, western and southwestern parts of the park receive the most sun.

Buckley Park Usage Observations

Buckley Park is used primarily as a scenic overlook above the Lake Michigan shoreline. There seems to be little recreation beyond occasional picnics, dog walkers and people sitting on the benches to view the lake. The exception to this is the northern edge of the park which many people use as a shortcut to and from Palisades, as well as to access the path down to the beach.

Core Soil Sample Results

The average turf root depth was two inches.

Buckley Park Weed Count Survey

Assessment: Assessed three plots of 10 x 16 feet each. The plots were located by using the flag pole memorial and one of the benches.

Plot One: 127 dandelions

Plot Two: 79 dandelions

Plot Three: 4 dandelions

Buckley Park Soil Test Results

Organic Matter: 6.2% (within ideal range)

pH: Slightly high at 7.4

Phosphorous: High – two times recommended level (should be 0.4% of total nutrients)

Potassium: High – two times recommended level (should be 1.1% of total nutrients)

Calcium to Magnesium Ratio: Good at 8 to 1 (ideal is 7 parts calcium to 1 part magnesium)

Soil Bacterial Level: Low at 91 micrograms per gram (100 to 300 is expected range – will benefit from compost tea applications)

Santa Monica Boulevard Medians

Walk-over Assessment

The overall condition of the turf on all six medians is fairly good in terms of overall thickness. There is evidence of plow and truck tire damage on several medians, particularly around the ends of the medians and along the curbs (see attached photos). The median between Lake View and Carlisle and the southern half of Belle and Montclair, where we focused our weed-out efforts this spring, have the heaviest dandelion populations along with some crabgrass, plantain and knotweed along the edges, where the plows have destroyed the turf. Although the other medians do have some weeds, they are more widely dispersed and less noticeable to the naked eye.

Light Conditions

With the exception of the northern half of the median between Lake View and Carlisle (receives mottled shade from the tree canopy), all six medians receive full sun for most of the day.

Usage Observations

The Santa Monica medians are not used for any recreational purposes and do not receive much pedestrian foot traffic. The median in front of Richards School, between Day and Belle, does receive light foot traffic during pick-up and drop-off and could have the potential to become compacted over time without an occasional aeration. Although not observed on this day, the build-up of plowed snow over the winter also contributes to both soil compaction. Clear signs of compaction and plow damage can be seen at the ends and along the sides of all six medians.

Core Soil Sample Results/Weed Count Survey per Median

Assessment: Assessed three plots per median; each plot is the width of the median (approximately 16 feet wide) by ten feet long. The plots are located at specific measurements along the length of each median.

Silver Spring to Beaumont: The average turf root depth for this median was three inches in the middle area and 1.5 inches along the edges.

Plot One: Knotweed along eastern edge; 34 dandelions

Plot Two: Knotweed along eastern edge; 30 dandelions

Plot Three: Knotweed along eastern edge; 22 dandelions

Beaumont to Lakeview: The average turf root depth for this median was one inch or less.

Plot One: Knotweed along eastern edge; 41 dandelions

Plot Two: Knotweed along western edge; 32 dandelions

Plot Three: 38 dandelions

Lakeview to Carlisle: The average turf root zone for this median was ½ to one inch.

Plot One: 131 dandelions

Plot Two: 128 dandelions

Plot Three: 112 dandelions

Carlisle to Day: The average turf root depth for this median was one inch.

Plot One: Knotweed along western edge; 38 dandelions

Plot Two: 23 dandelions

Plot Three: Knotweed along western edge; 25 dandelions

Day to Belle: The average turf root zone for this median was ½ inch.

Plot One: Bare spots/dandelions along western edge; bare spots and knotweed on eastern edge; 174 dandelions

Plot Two: Bare spots/knotweed along western edge; bare spots along eastern edge; 97 dandelions

Plot Three: Bare spots/knotweed along western edge; 133 dandelions

Belle to Montclair: The average turf root depth for this median was ½ inch.

Plot One: 132 dandelions

Plot Two: 56 dandelions

Plot Three: 44 dandelions

Santa Monica Medians Soil Test Results

Organic Matter: Low at 4% (optimal range 5 - 10%)

pH: High at 8.0 (optimal range for turf grass 6.0 – 7.0)

Phosphorous: High – two times recommended range (should be 0.4% of total nutrients)

Potassium: High – two times recommended range (should be 1.1% of total nutrients)

Calcium to Magnesium Ratio: Low at 4 to 1 (ideal is 7 parts calcium to 1 part magnesium)

Soil Bacterial Level: Low at 79 micrograms per gram (100 to 300 is expected range – will benefit from compost tea applications)

Description:

Earthcare tested the three pilot project turf areas for four significant indicators: total bacteria, calcium/magnesium ratio, % organic matter and pH.

Of the three pilot areas, Buckley Park has the best soil conditions for turf. It has a good percentage of organic matter and an adequate ratio of calcium to magnesium. However, the total soil bacteria were low, as was the case for all of the target areas.

School House Park and the Santa Monica medians show low levels of organic matter. This leads to thinner turf and, as the core soil samples indicated, less-developed root systems, opening the way for weed infestations.

The Santa Monica medians have the poorest conditions for turf. The low calcium/magnesium ratio, low organic matter, high pH, low bacteria levels and extremely shallow turf root zones create a “perfect storm” for weed infestations.

Earthcare Recommendations:

® Continued applications of soil enhancer will restore the biotic life of the soil and raise the percentage of organic matter over time. This is a slow but cumulative process that will improve with each year. It is very important that the turf be mowed high (3 inches minimum) in order to encourage deep root development. Aeration will also loosen up the soil and create aerobic conditions where the soil microbes can thrive.

® To improve the calcium/magnesium ratio on the Santa Monica medians, Earthcare included liquid calcium in the June soil enhancer application at no additional cost. Calcium could be added to future applications for an additional fee.

® To lower pH on the Santa Monica medians, the Village of Whitefish Bay could consider spreading elemental sulfur at the recommended rates to reduce the pH to 7. This would need to be done once every year or every other year, depending on the results of future soil tests. Earthcare can provide this service for an additional fee.

® Continued applications of slow release organic fertilizers like corn gluten, will provide proper nutrients for the turf and additional foods for the microbial life of the soil.