



September 10, 2015

Email [rd@raydunetz.com]

Ray Dunetz, Principal
Ray Dunetz Landscape Architecture
179 Green Street
Boston, MA 02130

**Re: Site Evaluation and
Invasive Species Management Report
Buttonwood Park
New Bedford, Massachusetts**

[LEC File #: RDLA\14-442.01]

Dear Mr. Dunetz:

As requested, LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation in the northwestern portion of Buttonwood Park to identify and characterize the existing invasive plant community. The purpose of this evaluation was to provide the City of New Bedford with vegetation management recommendations for this portion of the park. The following report provides a description of the existing conditions, the invasive plant species observed, and management recommendations.

Existing Conditions

The site evaluation was focused on the northwest corner of Buttonwood Park (hereinafter referred to as the “site”) immediately south of Route 6, north of Lieutenant Walter E. Fuller Memorial Parkway, east of Brownell Avenue and west of Oneida Street and Ilion Street (see Attachment A). The evaluation excluded the existing pond located adjacent to the Parkway and Brownell Avenue as well as the existing lawn and parking/building areas. Dense residential development surrounds the park to the west, east and south, with commercial buildings remaining to the north.

The site consists of forested upland and forested wetlands with a network of well-traveled footpaths extending throughout. Bordering Vegetated Wetland (BVW), delineated by the Conservation Commission Agent of the City of New Bedford, extends from the Pond to the north and east. Buttonwood Brook flows from a culvert beneath Route 6 within the forested area eventually discharging into the Pond. Attachment A shows the existing features including the approximate location of the BVW and forested upland.

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Vegetation within the forested upland includes a moderately dense to sparse canopy layer of eastern white pine (*Pinus strobus*), red maple (*Acer rubrum*), Norway maple (*Acer platanoides*), crabapple (*Malus* spp.), American elm (*Ulmus americana*), black cherry (*Prunus serotina*), black locust (*Robinia pseudoacacia*) and oak (*Quercus* spp.). The understory consists of saplings from the canopy layer and a shrub layer dominated by multiflora rose (*Rosa multiflora*), honeysuckle (*Lonicera* spp.), Japanese knotweed (*Fallopia japonica*), autumn olive (*Elaeagnus umbellata*), boxwood (*Buxus* spp.), arborvitae (*Thuja* spp.), arrowwood (*Vaccinium corymbosum*), and glossy buckthorn (*Rhamnus frangula*). Groundcover is variably dense, including patches of jewelweed (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomea*), hay-scented fern (*Dennstaedtia punctilobula*), and entanglements of black swallowwort (*Cynanchum louiseae*), poison ivy (*Toxicodendron radicans*) and Asiatic bittersweet (*Celastrus orbiculatus*).

Vegetation in the forested wetland includes a moderately dense canopy layer of red maple (*Acer rubrum*), tupelo (*Nyssa sylvatica*), and eastern white pine (*Pinus strobus*) with a dense understory including saplings from the canopy layer, glossy buckthorn (*Rhamnus frangula*), arrowwood (*Vaccinium corymbosum*) and sweet pepperbush (*Clethra alnifolia*). Groundcover consists of jewelweed (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*) and seedlings from the canopy. A large open wet meadow dominated by nodding sedge (*Carex gynandra*) is situated within the forested upland to the south of Route 6 and west of Ilion Street. Poison ivy and black swallowwort were observed on the outer portions of the meadow.

Invasive Species List and Distribution

During LEC's site evaluation we observed numerous non-native and/or invasive species as follows:

Trees: black locust, Norway maple and Crabapple.

Shrubs: honeysuckle, autumn olive, multiflora rose and glossy buckthorn.

Herbaceous: Japanese knotweed, Asiatic bittersweet and black swallowwort.

The distribution of these species is generally widespread throughout the upland areas with some isolated individuals and colonies encroaching on the wetlands. For the purpose of evaluating the impact and providing recommendations for management of each species, we have categorized the plants into one of three categories: 1. Scattered individuals; 2. widely scattered clusters and thickets; and 3. dense monoculture. It should be noted that generally speaking the wetland areas were dominated by native species while the upland areas contained the highest concentrations of non-native and/or invasive species.

Scattered Individuals:

The three tree species referenced above along with autumn olive and glossy buckthorn are present on the property in numerous locations but were not observed to be widely distributed.

Widely Scattered Clusters and Entanglements:

Numerous small to medium sized clusters of multiflora rose and honeysuckle were observed throughout the upland areas. Entanglements of Asiatic bittersweet are also widespread in the upland areas, typically climbing mature trees and saplings. Black swallowwort dominates some areas, particularly on the perimeter of the wet meadow described above. In total, these clusters and entanglements dominate the vegetative cover in the upland areas, leaving only widely scattered individuals and clusters of native species in their midst.

Dense Monoculture:

A dense monoculture of Japanese knotweed is located to the east of the pond within the forested upland (see Attachment A). The plant provides nearly 100% coverage in this area and is likely expanding its coverage with each growing season.

Management Recommendations

Management Recommendations are based on the following factors: extent of distribution, potential expansion of distribution and cost to remove, restore and maintain. The specific methods for removal of the most problematic plants may require consultation with a specialized landscaping company experienced with such work. To that end, we consulted with an experienced firm who provided an estimate to perform certain services (Attachment B) based on this analysis. The options for restoring areas occupied by these species may also require further analysis in the context of the City's goals for public use, safety and maintenance of this portion of Buttonwood Park.

Invasive species management in this portion of Buttonwood Park should focus on removal/control of Asiatic bittersweet entanglements, clusters of multiflora rose/honeysuckle and the monoculture of Japanese knotweed. The Asiatic bittersweet has killed numerous trees already and is in the process of choking out others. The clusters of multiflora rose/honeysuckle occupy large swaths of the upland thereby displacing native species. Likewise, the colony of Japanese knotweed is displacing native species and may be expanding rapidly. Together these species dominate the upland areas and are likely to continue expanding into other areas not yet dominated by non-native/invasive species. Successful removal and restoration of areas dominated by these species would result in a significant ecological improvement and could be designed to improve aesthetics, public access and safety in this portion of the park.

As noted above, the specific management techniques for each of these species may require consultation with a specialized landscaping company. The likely method for removing the invasive species will involve a combination of mechanical removal and pesticide application.

Options for restoration of areas dominated by invasive species typically focusing on re-establishing a native plant community by re-planting native species. This type of restoration can be extremely costly if numerous tree and/or shrub plantings are utilized. As an alternative to tree and shrub plantings, larger restoration areas could be allowed to re-generate naturally after mechanical removal of undesirable species followed by pesticide application as necessary.

Summary

LEC identified and inventoried non-native/invasive species at the northwestern portion of Buttonwood Park and has offered Management Recommendations for consideration by the City of New Bedford. While we recognize that developing a comprehensive, site-specific Management Plan will require additional consultation involving considerations beyond our area of expertise such as landscaping methods, public use and safety, we would appreciate the opportunity to continue consulting on this project.

Should you have any questions or require additional information, please do not hesitate to contact us at (508) 746-9491 or mmanganello@lecenvironmental.com.

Sincerely,

LEC Environmental Consultants, Inc.



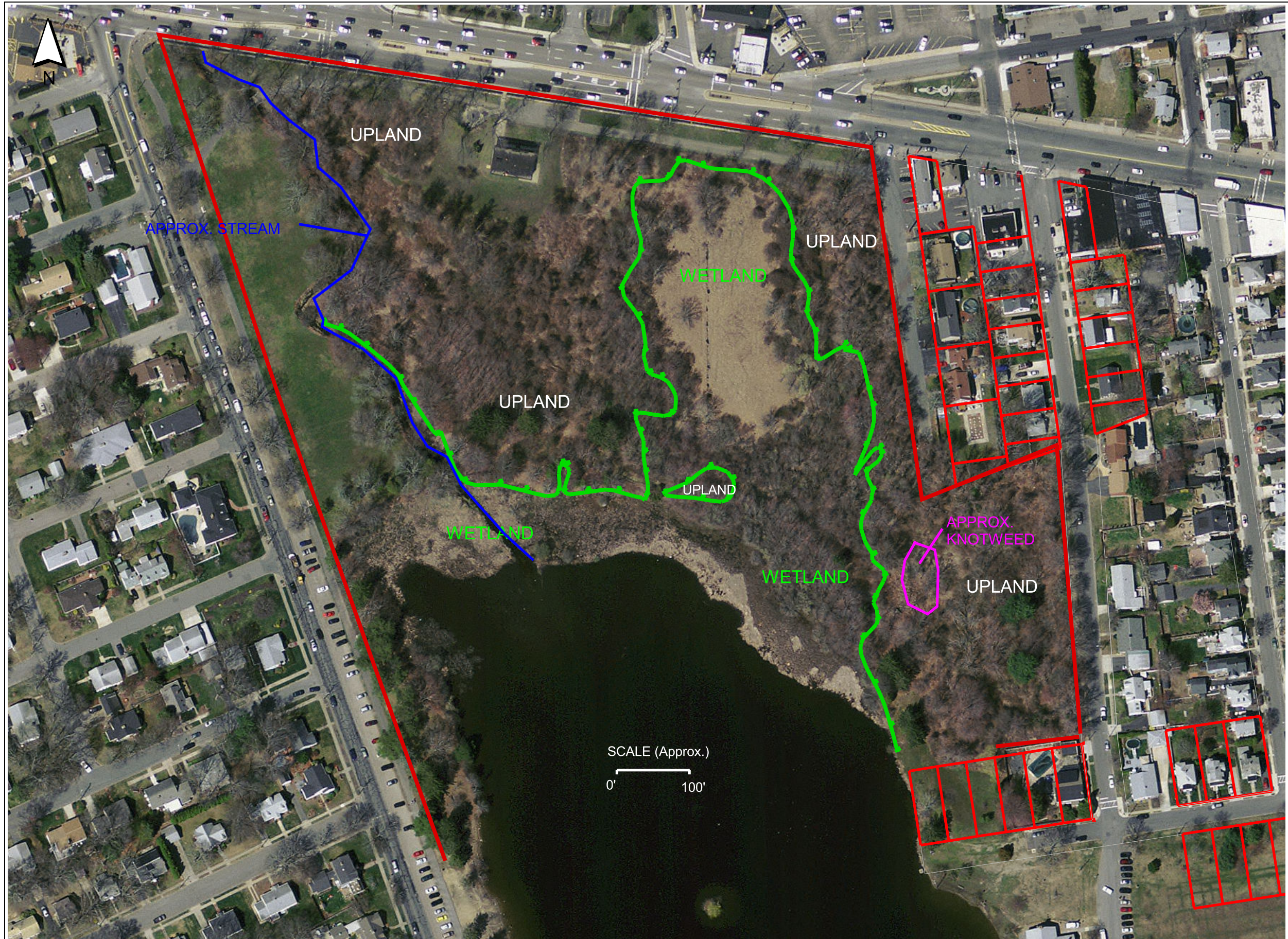
Mark L. Manganello
Assistant Director of Ecological Services



Claire Staines
Wetland Specialist

Attachment A



Buttonwood Park Aerial Orthophoto,
prepared by LEC
dated 9/2/15



**BUTTONWOOD PARK
AERIAL ORTHOPHOTO**

9-2-15

Legend

-  Approximate Property Boundary
-  Approximate Wetland Boundary

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Attachment B

Buttonwood Park Invasive Species Control Estimate
prepared by Groundscapes Express, Inc.

Buttonwood Park Estimate

Two days one man with mower with a low impact skid steer \$1800 per day.
Estimate two days. Total \$3600.00

Three days three men with truck chipper and saws \$2200 Per day. Estimate
two days. Total \$6600

Today's spot spraying two men equipment and material \$2600 per day estimate
two days total \$5200

Thank you,

Butch Goodwin
Operations Manager

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