# PUBLIC LANDS VEGETATION MANAGEMENT PLAN

**CITY OF NORTH WILDWOOD**
**CAPE MAY COUNTY, NJ**

**MARCH 2016**


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## SECTION 1. INTRODUCTION

Public lands, including wetlands, parks, beaches and dunes, within the City of North Wildwood are vitally important assets of the community. These vegetated features serve as protective buffers, productive habitats, valuable resources, aesthetically appealing vistas and recreational opportunities.

The coastal wetlands expanses along the back bay portions of the City provide a myriad of natural and public benefits ranging from storm energy dampening to water quality improvements to habitats for a diversity of wildlife. The beach and dune complex provides for coastal storm protection, sand bank reserves for resource replenishment, critical wildlife habitat and recreation. The City's maintained park lands provide active (playing fields and courts) and passive (beach and dune walks) recreation opportunities. Other natural areas provide vistas that characterize the aesthetics of the City, balancing the coastal urban setting with expanses of open space. The City's public lands have been assembled over the years through the proactive efforts of its administration and via the formation of key partnerships with public and private organizations to improve the quality of life for residents and visitors alike. The resulting inventory requires attentive continuing vegetation care, maintenance and management.

Within the City's dune complex, as well as select public locations, well-meaning protection efforts of the past resulted in the introduction of invasive vegetation species that have created unintended ecological and physical consequences (i.e., these plantings have become a dominant feature, displacing native species and posing threats to public safety). The Japanese black pine (*Pinus thunbergiana*) and common reedgrass (*Phragmites australis*) became well-established, albeit through different means, adjacent to residences and recreational facilities within the City. The resulting stands of these invasive species have produced excessive volumes of combustible tinder which precludes the germination of native species and creates a potential for wildfires in close proximity human uses and community site improvements. In addition, these stands have created a visual barrier impacting the aesthetic of the community, and pose a threat to the value of the oceanfront and bayfront properties. These stands of invasive vegetation are outcompeting and displacing the diverse native species, thereby creating ecological risk, especially in the dunes and vegetated screenings throughout the community. The City, as part of its natural resource stewardship, has assembled a Community Forestry Management Plan to address tree-related practices. In concert with this Public Lands Vegetation Management Plan, the Community Forestry Management Plan, provides goals, best practices and management standards for the City's Department of Buildings, Parks and Grounds and their contracted professionals.

The proliferation of Japanese black pine has created the potential for regional vegetative instability because of its susceptibility to pests and pathogens. Dead and dying Japanese black pines are readily observable on the barrier Islands, as well as on the mainland. As such, it has become necessary to evaluate the extent of this problem and to establish a strategy to reduce or eliminate the adverse impact of this species while protecting the integrity of the City's dune complex and other public lands. Expanses of common reedgrass, as well as extensive, unchecked propagation of damaging vines, threatens natural habitats, viewsheds, public safety and community site improvements. The abundance of poison ivy (*Toxicodendron radicans*) along public walkways through the oceanfront and inlet dune complex and in thickets adjacent to recreational facilities in the City poses a public health risk. Incidental exposure by unaware residents and visitors is problematic. Further, incorrect management practices can produce unintended consequences of exacerbating the spread of this species, and even worse, can aerosolize the plants' poison oils during cutting.

The Lomax Consulting Group conducted a preliminary evaluation of extent and potential impacts of these invasive and detrimental species and completed an inventory of the City's public lands, graphically depicted on the "Public Lands Vegetation Management Plan Aerial Overview Map" **(APPENDIX A)**. The map provides the location and general extent of City-owned, operated and/or managed public lands. By evaluating these properties, as well as documenting the existing type and condition of localized vegetation, within the context of each property's intended use and adjoining lands, vegetation management strategies were customized to enhance the overall quality of habitats in the City while balancing public interest. This Public Lands Vegetation Management Plan ("Plan") is presented for use by City administration and departments, and is intended to serve as a guidance document for implementation of vegetation management strategies on public lands within the City.

## SECTION 2. BACKGROUND

### 2.1 Statement of Values of Public Lands and their associated Vegetation

The City of North Wildwood vegetated public lands are a critically important and integral natural resource of the community that provide: (a) protective buffers dissipating coastal storm energy; (b) banks of sand to replenish the beach system during coastal storm events; (c) extensive and diverse habitats for local plants and wildlife adapted to coastal habitats; (d) protections for unique, sensitive maritime ecosystems; (e) green space in an otherwise urban setting; and (f) recreational opportunities. Accordingly, the City must engage in responsible stewardship practices to protect, enhance and manage these vital community resources.

"Vegetation management" consists of activities including the monitoring, evaluation, maintenance, enhancement, planting, pruning, cutting, removal, control, alteration or destruction of plant species and/or the lands upon which the plant species exist or are intended to exist.

2.2 Statement of Issues Resulting from the Establishment of Non-native/Detrimental Species

Invasive and/or detrimental vegetation, such as the Japanese black pine, poison ivy, common reedgrass and damaging vines, continues to spread throughout the natural areas and parklands adjacent to residences, recreational and public facilities at such an alarming rate that it has: (a) resulted in hazardous conditions associated with combustible tinder base subject to wildfire in close proximity to residences and the protective dune complex; (b) evolved into monocultures resulting in degraded and unsuitable habitat for wildlife adapted to the native vegetation; (c) subjected portions of the public lands system to destabilizing vegetative cover through the die-back of these species resulting from natural and control activities; (d) created unacceptable risks to public safety; and (e) created undesirable peripheries adversely impacting viewsheds and potentially property values. Therefore, it has become necessary to examine this problem and to establish a comprehensive strategy to reduce and, where appropriate, eliminate the adverse impact of these species, while protecting the integrity of the City's dune complex and the vitality of its public lands.

## SECTION 3. PUBLIC LANDS VEGETATION MANAGEMENT PLAN

3.1 Goals of the Plan

3.1.1 Establish science-based practices to evaluate and manage public lands vegetation in a manner to achieve the goals of the City.

3.1.2 Maintain healthy, diverse natural areas, streetscapes and parklands comprised primarily of native and acceptable cultivated species.

3.1.3 Establish and maintain appropriate vegetation that protects the integrity of the dune complex, allows safe public access to the beach and other public areas, enhances wildlife and promotes air circulation and appropriate view sheds.

3.1.4 Promote safety measures to control vegetation-based hazards to the public and adjacent private properties.

3.2 Objectives of the Plan

3.2.1 Establish vegetation management practices that define buffers between public lands and private property.

3.2.2 Identify problems associated with invasive and detrimental plant species on the public lands.

3.2.3 Develop a Public Lands Vegetation Management Plan that addresses control of invasive and problematic plant species, in addition to uncontrolled growth of vegetation that is encroaching on public facilities.

3.2.4 Provide management standards and techniques that allow for the improvement of the vegetative component of the dune ecosystem, parklands and other public lands.

3.2.5 Utilize vegetation that enhances wildlife habitats and stabilizes important natural areas.

3.2.6 Establish a living fence program that provides vegetative screening without adversely impacting air circulation or view sheds.

## 3.3 Roles and Responsibilities

3.3.1 Public Lands Vegetation Management and Maintenance. The City shall oversee and/or conduct maintenance activities on public lands, including vegetation management, it deems necessary. The City engages in public lands vegetation management primarily through its Department of Buildings, Parks and Grounds and secondarily with assistance from the Department of Public Works. Private property owners do not have authority, nor does this Plan indicate authority, for said owners to engage in vegetation management on public lands. Any vegetation management deemed appropriate on public lands shall be completed by the City or its contracted professionals. Private property owners requesting vegetation management activities on the City's public lands shall submit written requests to the appropriate City Department with the understanding that the City in its sole discretion will determine if the requested activities are consistent municipal ordinances, land use regulations and this Plan. As part of the vegetation management request evaluation, the appropriate Department shall refer to the City's ordinances, pertinent land use regulations and this Plan after which it will submit its proposed action to the Administration. If the proposed action is approved, the City will schedule the proposed action and make necessary arrangements for the vegetation management on public lands. In the case of dune vegetation maintenance, plantings will be monitored in order to ensure the success and survival of the plantings installed to protect the integrity of the dune complex.

3.3.2 Public Education. While the City maintains the overall health and integrity of the beaches, dunes, parks and natural areas, appropriate stewardship by the adjoining property owners and visitors is integral to the protection of this community asset. The City accomplishes this

task by providing the public with proper education, guidance and signage that is pertinent to protection of public land features. Interested parties are encouraged to contact the Code Enforcement Office and Department of Buildings, Parks and Grounds for direction or clarification specific to vegetation management within the City. The City has delineated its public lands; areas defined as beaches, dunes, parks and other natural growth, as referenced and mapped as part of this Plan, which is available through the Clerk's Office and the Department of Buildings, Parks and Grounds.

3.3.3 Monitoring. Private property owners, especially those living adjacent to public land or having dunes, wetlands or regulated natural areas on their property, play an important role in maintaining healthy plant communities. Beyond responsible stewardship of their own lands, private property owners have the unique opportunity to aid the City through monitoring of: (a) activities that may damage sensitive natural areas; or (b) hazardous conditions that could impact health and public safety. The City encourages the reporting of suspicious activities in violation of City ordinances or hazardous conditions. Private property owners or other interested parties are directed to contact the Code Enforcement Office and/or Police Department, as appropriate to circumstance.

3.3.4 Private Property Vegetation Management. While it is understood that private property owners or their landscaping professionals may choose to engage in landscaping activities, including vegetation management, on their own properties, these activities must adhere to local ordinance limitations and be consistent with state and federal land use protections. Ultimate responsibility for actions inconsistent with the City ordinances and/or state and federal land use regulations falls on the property owners. Accordingly, various safeguards have been incorporated into the design of this Plan. These safeguards provide an opportunity for addressing landowner concerns while providing guidance and public notification through the Public Lands Vegetation Management planning and implementation process.

3.3.5 Enforcement. The City possesses the framework for protecting its assets, including natural resources, by establishing and implementing protective ordinances and through the enforcement of these regulations through its police powers. Violations of City ordinances shall be addressed by the Code Enforcement Office and/or Police Department, as appropriate to circumstance. Activities which violate state and/or federal land use regulations shall be referred to these entities for appropriate response and resolution. The City will obtain a jurisdictional determination from The New Jersey Department of Environmental Protection (NJDEP) to ensure that management techniques set forth herein are in accordance with NJDEP regulations and policies.

3.3.6 Funding. For certain vegetation management activities on public lands, the City may opt to utilize alternate funding sources. In such cases the City of North Wildwood assumes the role of applying for and facilitating the appropriate grants and aid with respect to Public Lands Vegetation Management.

## 3.4 Management Standards

3.4.1 The establishment of priority areas for Public Lands Vegetation Management is essential to the effective, overall success of the program. A prioritization system will allow the City to determine key areas where and what type of vegetation management is necessary on a priority basis to secure the integrity of the dunes, parks, paths and natural areas and to ultimately protect the quality of life of citizens living in and visiting the City.

3.4.2 Once the priority areas have been defined, proposed actions identified and locations secured, site investigations will be conducted. Trees and other vegetation that require management will be located, characterized and identified by species, size (e.g., approximate height and dbh), condition (e.g., living or dead, native or invasive species) and area impacted. This information will be plotted on a site plan. Vegetation requiring management will be identified and physically marked in the field, as appropriate or necessary. Replacement vegetation should be appropriate to the location (i.e., environmental conditions) and specific purpose of the intended planting. Vegetation used in the dune complex should be selected from the "List of Acceptable Plantings for Dune Habitats" **(APPENDIX B)**, whereas vegetation to be used on other public lands, including parks and streetscapes, should be selected from the "List of Acceptable Plantings for Landscapes, Streetscapes and Parklands" **(APPENDIX C)**.

3.4.3 Management Actions are separated into the following categories:

(a) Immediate Hazard Removal. The immediate removal of the aerial portion of dead or dying trees or vegetation deemed to pose likely and immediate threats to public safety.

(b) Planned Invasives/Detrimental Vegetation Removal. The scheduled, prioritized removal of seedling and sapling Japanese Black Pine or other invasive, detrimental vegetation, (e.g., common reedgrass, bamboo, etc.). Clipping the aerial portion of seedling and sapling Japanese black pine at ground level prevents the maturation and production of offspring while providing the opportunity for displacement of detrimental species by native vegetation. The removal of the aerial portions of both common reedgrass and bamboo can stimulate rhizome growth in these species. Accordingly,

above ground cutting and removal is most effective when combined with below ground removal of the rhizome, where possible, or selective herbicide treatment.

(c) Planned Invasives/Damaging Vine Control. The scheduled, prioritized and selective physical trimming or chemical control of invasive species and detrimental vegetation, (e.g., common reedgrass, bamboo, etc.), and/or damaging vines (e.g., English ivy, poison ivy, Japanese honeysuckle, wild grape, Virginia creeper and greenbriar). Damaging vine controls shall follow prescribed protocols so as to preserve the structural integrity of the host species on which the vines are growing (**APPENDIX D)**. Failure to do so will likely cause breakage and further damage to the host species. Control, in lieu of removal, may be a preferred strategy in select scenarios where regulatory restrictions preclude complete removal due to the level of disturbance required, or where removal would render a location more susceptible to erosional forces, or where timing/resource limitations do not allow for removal activity. In these scenarios, a long-term control/maintenance strategy shall be designed and implemented.

(d) Routine Buffer Maintenance. Where possible and appropriate, vegetation should be controlled by routine cutting to maintain a minimum 10-feet clearing (i.e., maintained buffer) of woody or detrimental vegetation between natural areas and public facilities, such as buildings, fences and recreational facilities. Additionally, if deemed appropriate, the City may choose to maintain similar maintained buffers to private properties.

3.4.4 Replacement Specimens. The invasive and detrimental vegetation replacement process shall be implemented with native species, when and where possible, that are:

(a) Drought tolerant

(b) Less susceptible to disease

(c) Less prone to wildfire

(d) Known to provide enhanced food and habitat for native wildlife.

Refer to the "List of Acceptable Plantings for Dune Habitats" **(APPENDIX B)** and "List of Acceptable Plantings for Landscapes, Streetscapes and Parklands" **(APPENDIX C)** which have been developed to identify appropriate vegetation for particular locations and uses within the public lands. The replacement vegetation should be inspected in the fall of each year to ensure successful establishment. Plant replacement is recommended for dead or dying plants, unless volunteer native vegetation has become established at the site in a manner that effectively replaced the dead planting. Plants shall be maintained and may be trimmed to promote their health consistent with the approved Plan.

3.4.5 Safeguards and best practices are a guiding standard for the design and implementation of this Plan and shall be followed to ensure that the City's biotic communities are

protected to the maximum extent practicable and that public health, safety and welfare remains an utmost priority.

(a) Live native vegetation will be retained to the maximum extent.

(b) Replacement with native plants in the dunes or appropriate plants on other public lands.

(c) The entire root system of the trees and shrubs to be removed will be preserved without disturbance to retain the structure within: i. the dune complex; and ii. other public lands, unless they will interfere with the establishment of the replacement plantings (in the latter case ii only).

(d) Cutting and removal of invasive species and detrimental vegetation will be accomplished using trained professionals.

(e) A NJDEP-licensed commercial herbicide/pesticide applicator shall be required to apply insecticides and/or herbicides in public areas as part of vegetation management practices, including for the control of poison ivy and common reedgrass. Areas treated with controlled substances shall be well-marked and restricted from public use until such time as it is safe to do so. Applications of controlled substances, particularly herbicides and pesticides, shall be conducted during favorable environmental conditions in order to mitigate risk of overspray or drift that could otherwise harm native and preferred species.

(f) The installation of a sand fence along the ocean-side of proposed management areas shall be evaluated on a case by case basis to ensure that the planted specimens will be sheltered from coastal conditions, as appropriate.

(g) Accessibility and reference to policy and program documents, including this Plan, shall be prioritized with multiple copies available within the appropriate City departments.

(h) Should questions arise as to the purpose, intent or meaning of elements of this Plan, clarification shall be sought from the City administration, where assistance can be rendered by contacting the author and/or qualified professionals.

3.4.6 Inspections and monitoring are important elements of this Plan by providing continued feedback concerning the successes and necessary revisions of the program implementation. It is proposed that the Base Map be used to track and update priority restoration or management areas and facilitate monitoring success of the Plan. Pre-inspections and post-inspections are vital to effective implementation of this Plan. Photo-documentation of areas involved in public areas management is critical in order to document the need/risk/hazard, plan/prescribe the necessary activity, implement the action, document the post-activity condition and measure the success. Inspection reports

specific to the success of replacement plants should be submitted to the appropriate City department(s) for monitoring and documentation purposes.

3.4.7 Proper safety precautions shall be adhered to for activities conducted by City employees or contracted professionals pursuant to this Plan, including but not limited to:

(a) Awareness and familiarity with work area, including use of NJ One Call, competency with equipment to be used, proficiency in requisite techniques and skill sets required.

(b) Vigilance with respect to safety precautions, individual personal limitations and potential hazards, including environmental conditions, equipment, utilities (overhead and underground), load-bearing or under tension forces, heights and corrosive or combustible materials.

(c) Identification of safe zones and exit routes in case of emergency.

(d) Competency in use of emergency and communications equipment.

(e) Use of proper protective gear and clothing, including well-fitted helmets, protective eyewear, ear plugs or muffs, gloves, footwear, as well as facemasks for dusty or particulate-filled air, fall harnesses with secure anchorage point when working at heights, high visibility clothing, etc.

(f) Accessibility to and knowledgeable use of first aid equipment and supplies, communications policy for requesting assistance and reporting protocol/procedures for incidents.

3.4.8 Activities in the City's Dune Complex. In the dunes, replacement plantings shall be selected, installed and maintained consistent with "Standard for Creating and Restoring Sand Dunes" **(APPENDIX E)**, where appropriate. The holes should be twice the size of the plant container for shrubs and tree container or root ball. The soil amendments of topsoil and/or organic matter and hydro-crystals are used to backfill the hole to promote survivability of the plants. The specimens are planted in a staggered row configuration, where appropriate. In dune complex areas, the roots that remain after the aerial portion of the vegetation is removed shall be left in place so as to minimize disturbance to the soils. As an additional protective measure to ensure the integrity of the complex, heavy vehicle based equipment shall not be used for vegetation management activities in the dunes, including the removal of hazardous or damaging trees, shrubs or vines.

3.4.9 Living fences of appropriate vegetation can create effective barriers to demarcate boundaries, abate noise and excessive winds, provide screening and create wildlife habitat. Living fences, especially those along property boundaries, must be thoughtfully designed and maintained, in order that they not become a nuisance. Growth height and width should be restricted to prevent impairment of an adjoining property or preclude the

enjoyment of an adjoining property, such as the interference with interfere with light, air circulation and views. Accordingly, heights should not exceed 96", as measured from existing grade (not from landscaped grade features, such as planters or raised beds). Widths should not extend into an adjoining property to the extent that it requires the adjoining property owner to maintain the vegetation. Suitable practices and selection of appropriate vegetation can provide long-lasting fences that are not only aesthetically pleasing but very functional. Vegetation to be used in installation of a living fence should be selected from "List of Acceptable Plantings for Living Fences" **(APPENDIX F)**. The List of Vegetation for living fences includes details for each species regarding plant characteristics, including wildlife value.

## SECTION 4. PUBLC LANDS VEGETATION MANAGEMENT PRIORITIES

4.1 Area-Specific Management Practices for City Public Lands

Public lands inventoried for vegetation management action within this Plan include the following properties, which are depicted in photographs located in **APPENDIX G**.

4.1.1 Oceanfront Dune Complex (including beach paths and bike path) and Hereford Inlet Park (including West Anglesea Drive)

(a) Monitor dune complex and park areas for: signs of vegetation stress/die-back; emergence or spread of invasive or hazardous species; and/or propagation or spread of damaging vines onto structures/trees/shrubs or into paths.

(b) Remove invasive species to the maximum extent practicable, especially Japanese black pine by cutting at the ground surface and common reedgrass by cutting where possible and selective herbicide where necessary. Replace invasives with native dune vegetation consistent with this Plan.

(c) Cutting and control of damaging vines from healthy native species per the practices outlined in this Plan.

(d) Install a row of sand fence on the Oceanside and Inlet side of the dunes to trap sand. Augment sparse vegetation at dune crest and localized slopes to enhance dune integrity with herbaceous plantings, including American beachgrass (*Ammophila breviligulata*) on the oceanside of the dunes, and plant seaside goldenrod (*Solidago sempervirens*), saltmeadow cordgrass (*Spartina patens*) and/or coastal panic grass (*Panicum amarum*) on the landward side of the fore dune and primary dunes. Woody vegetation (trees and shrubs) should be planted in the back dunes as prescribed in this Plan.

(e) Fertilize the vegetation enhancements in the dunes at least once yearly in the spring.

(f) Control poison ivy and other invasive or detrimental species encroaching onto structures/trees/shrubs or into the beach trails, park paths and bike paths. Poison ivy should be controlled with the application of an approved herbicide applied by a NJDEP-licensed commercial herbicide/pesticide applicator under approved environmental conditions as outlined in this Plan. Repeat applications as necessary to ensure public safety.

4.1.2 Hereford Inlet Lighthouse and Garden

(a) Evaluate the existing buffer plantings within the context of invasive species proliferation. Remove and replace on-site Japanese black pine, bamboo and poison ivy with species adapted to this coastal setting and complimentary of the intended site vegetation goals.

(b) Replacement species selection shall account for long-term site goals, including consideration for limited screening within the confines of the living fences criteria of this Plan and the need to maintain viewsheds to and from this prominent historic asset.

(c) Emphasize a diversity of vegetation on this site to demonstrate to the public which native species are adapted to coastal conditions and enhance wildlife habitats. Further, on-site landscape design and species selection should enhance the integrity of the adjacent natural areas.

(d) Monitor property for: signs of vegetation stress/die-back; emergence or spread of invasive or hazardous; and/or propagation or spread of damaging vines onto structures/trees/shrubs or into paths.

4.1.3 Albert Allen Memorial Park

(a) Monitor park boundaries and planting areas for: signs of vegetation stress/die-back; emergence or spread of invasive or hazardous species; and/or propagation or spread of damaging vines onto structures/trees/shrubs or into paths.

(b) Remove invasive vegetation to the maximum extent practicable, especially Japanese black pine by cutting at the ground surface and common reedgrass by cutting where possible and selective herbicide where necessary. Special attention should be given to vegetation encroaching into the park facilities, including along the fence line on the bayside of the park. Create a maintained area up to 10 feet wide, clear of woody vegetation including vines, between the vegetation and the fence provided that the vegetation removal does not encroach upon areas regulated under the Wetlands Act of 1970 and/or the Freshwater Wetlands Protection Act.

(c) Replacement species selection shall account for long-term site goals and maximize opportunities to showcase native species by using plantings adapted to the coastal environment as replacements, lists prescribed in this Plan.

(d) Cutting and control of damaging vines from healthy native species per the practices outlined in this Plan.

(e) Control poison ivy and other invasive or detrimental species encroaching onto structures/trees/shrubs or into the park paths. Poison ivy should be controlled with the application of an approved herbicide applied by a NJDEP-licensed commercial herbicide/pesticide applicator under approved environmental conditions as outlined in this Plan. Repeat applications as necessary to ensure public safety.

4.1.4 City Hall, Bill Henfey Park and Oak Avenue Park

(a) Monitor these properties for: signs of vegetation stress/die-back; emergence or spread of invasive or hazardous species; and/or propagation or spread of damaging vines onto structures/trees/shrubs or into paths.

(b) Replacement species selection shall account for long-term site goals, including consideration for limited screening within the confines of the living fences criteria of this Plan and the need to maintain viewsheds to and from these prominent community features. Additionally, replacement plantings provide opportunities to showcase native species by using plantings adapted to the coastal environment as replacements, lists prescribed in this Plan.

(c) Emphasize a diversity of vegetation on these properties to demonstrate to the public which native species are adapted to coastal conditions and enhance wildlife habitats.

4.1.5 Bayfront and Boardwalk Beach Parks, Public Works/Recycling Center, Community Center

(a) Evaluate the existing opportunities to install plantings at these properties to enhance site amenities, including adding shade and green space, as appropriate.

(b) Species selection shall account for long-term site goals and maximize opportunities to showcase native species by using plantings adapted to the coastal environment, lists prescribed in this Plan.

4.1.6 Central Avenue Traffic Islands

(a) Inventory and monitor these medians for: signs of vegetation stress/die-back and opportunities to diversify species plantings to mitigate risk of species-specific pathogens that could eradicate monoculture plantings through a single infestation.

(b) Replacement species selection shall account for long-term site goals and maximize opportunities to showcase native species by using plantings adapted to the coastal environment as replacements, lists prescribed in this Plan.

4.1.7 Veterans Park Gateway

(a) Monitor this park for: signs of vegetation stress/die-back; emergence or spread of invasive or hazardous species; and/or propagation or spread of damaging vines onto structures/trees/shrubs or into walkways.

(b) Replacement species selection shall account for long-term site goals and maximize opportunities to showcase native species by using plantings adapted to the coastal environment as replacements, lists prescribed in this Plan.

4.1.8 Coastal Wetlands Complex

(a) Monitor the expanse of coastal wetlands for: signs of vegetation stress/die-back and/or emergence or spread of invasive or hazardous species.

(b) Remove and/or implement controls for invasive species along the margins of the coastal marsh to the maximum extent practicable, and supplement with native species to the extent that these activities are or can be permitted under the Wetlands Act of 1970 and/or the Freshwater Wetlands Protection Act.

## SECTION 5. PLAN REVIEW AND IMPLEMENTATION PROCESS

5.1 Review and Revision

This Public Lands Vegetation Management Plan promotes the use of management standards and techniques that maintain healthy, diverse biotic communities throughout the City's dune complex, park lands, streetscapes and natural areas, while providing for public safety and quality of life considerations for residents and visitors. This Plan will undergo review by the public and Departments of the City, as well as other interested agencies of government as noted below. From time to time, as deemed necessary by circumstance, this Plan shall undergo review and revision to reflect the most current operational and management needs of the City.

5.1.1 Inter-governmental coordination can occur through discussions with appropriate natural resources management agencies, including the NJ Department of Environmental Protection **(APPENDIX H)**, the U.S. Fish and Wildlife Service and Natural Resources Conservation Service of the US Department of Agriculture, when deemed appropriate.

5.1.2 This Plan should be reviewed and deemed acceptable by the City administration and appropriate City departments, including at a minimum the Department of Buildings, Parks and Grounds.

5.1.3 Revisions of this Plan should be presented to the public and reviewed by Departments of the City, as well as other interested agencies of government, as deemed appropriate to the nature of revisions proposed.

5.1.4 The Lomax Consulting Group stands ready to consult with the City to address emerging issues, needs and updates to ensure that this Plan remains an effective working document for the City's oversight, maintenance and management of vegetation on public lands.

5.1.5 The Plan shall be presented to City Council for its review and recommendation.

5.2 Vegetation Management Plan Implementation

5.2.1 After review and recommendation by City Council (incorporating updates/changes, as deemed necessary), Plan elements will be prepared for adoption into the City Ordinances, where appropriate.

5.2.2 Upon receiving all required inputs and approvals, this Plan will then be implemented on the basis of priority actions subject to available City resources.

5.2.3 Public meeting(s) will be conducted, as appropriate, to inform the public and interested parties of the purpose and provisions of this Plan.

## SECTION 6. CONCLUSION

The protection of the City's public lands, including the ecological and structural integrity of its dune complex, as well as park lands, streetscapes and natural areas, remains critical to the welfare of the community. Maximizing native vegetation through supplemental enhancements, vegetation replacement and scheduled plantings provides for a wealth of positive benefits, including but not limited to storm energy dissipation, coastal flooding mitigation, water quality improvements, resource reserves protection, biodiversity improvement, recreational opportunity, preserved vistas and green space enrichment. The prescribed mitigation of invasive species is necessary to preserve the vitality of the unique ecology within this barrier island setting. The removal of hazardous vegetation is important to reduce City liabilities and to improve the quality of life for residents and visitors. The natural resource management goals and objectives contained within this Vegetation Management Plan perpetuate long-standing practices of progressive environmental stewardship by the City.

This Vegetation Management Plan creates a science-based framework for the community to maintain it's public lands in their natural state, where appropriate, and landscape in a manner compatible with the public interests and uses. It identifies specific roles of entities within the community and the management standards that safeguard the integrity of the public lands, while allowing for active management and restoration. The Plan not only outlines the specifics of management practices to be applied in the field, but also provides for demonstration plantings to ensure that best management practices are being utilized based upon experience derived from actual operations within the City. Furthermore, the Plan defines the approval process to ensure that

the goal of a healthy and diverse ecosystem is connected to the City's public policy process. Accordingly, the Plan is positioned to benefit from public and governmental review, and ultimately is most effective through integration with the City Master Plan and appropriate Land Use Ordinances.

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# APPENDIX A.

# PUBLIC LANDS VEGETATION MANAGEMENT PLAN AERIAL OVERVIEW MAP

Albert Allen Memorial Park
Bayfront Park
Oak Ave Park
Public Works & Recycling Center
Veterans Park Gateway
Community Center
Hereford Inlet Lighthouse & Gardens
Bill Henfey Park
City Hall
Hereford Inlet Park
Boardwalk Beach Park

## Legend

- City of North Wildwood Boundary
- Public Lands Vegetation Management Areas
- Public Parks
- Central Ave Traffic Islands
- Bike Path

SCALE: 1 inch = 500 feet

0 250 500 1,000 Feet

SOURCES:
BingMaps Aerial Photograph
NJ Office of Info Technology
TLCG Site investigations

# CITY OF NORTH WILDWOOD

## PUBLIC LANDS VEGETATION MANAGEMENT PLAN
## AERIAL OVERVIEW
## CITY OF NORTH WILDWOOD, CAPE MAY COUNTY, NEW JERSEY

| | |
|---|---|
| DRAWN BY: ACB | DATE: 10-30-15 |
| CHECKED BY: PLL | REVISED: |
| PROJECT #: 14-871 | |

PRJ\Act\14-871\Site Mapping\ResMapping\Aerial Overview 24x36

the LOMAX Consulting group

# APPENDIX B.

# LIST OF ACCEPTABLE PLANTINGS FOR DUNE HABITATS

# LIST OF ACCEPTABLE PLANTINGS FOR DUNE HABITATS

Adapted vegetation is an integral part of the overall dune complex that is vital to the protection of the City of North Wildwood from coastal storms. This vegetation aids in sand deposition and accumulation, and serves to mitigate erosional forces and retain the sand in the dunes. The City of North Wildwood dune complex is a diverse ecosystem exposed to wind and salt spray. The dune soils are sandy; and as such are droughty. Accordingly, the selection of adapted plants that will survive and flourish in the harsh environment of the dunes is critical. Further, species selection must account for variable growing conditions within the dune complex. In recognition of these important considerations, the following list of acceptable plantings for dune habitats is divided into three main categories based upon exposure and soil moisture conditions: (A) Salt Spray Tolerant Vegetation, (B) Sheltered Upland Dune Vegetation and (C) Sheltered Wetland Dune Vegetation based on the species tolerance of conditions and location in the dune system. Criteria for selection of the following native plant species for dune re-vegetation include: (1) adaptation to survival in the dune environment; (2) resistance to disease and pests; (3) drought hardiness once established; (4) ability to be pruned to control shape and height, if trimming is initiated early in the tree/shrub development, and (5) availability from nurseries. The following information is provided based on extensive literature review, direct dune observations in natural areas of coastal barrier island communities, in addition to firm experience and communications with other qualified peer professionals.

***Notes:*** *(*) used by wildlife for food (including pollinators); (**) indicates high wildlife value, including .*

## A. Salt Spray Tolerant Vegetation

### 1. Trees:

| Common Name | Scientific Name |
|---|---|
| Eastern red cedar* | *Juniperus virginiana* |
| Black cherry** | *Prunus serotina* |
| Winged sumac** | *Rhus copallinum* |

### 2. Shrubs:

| Common Name | Scientific Name |
|---|---|
| Northern bayberry** | *Morella pensylvanica* |
| Beach plum* | *Prunus maritima* |
| Groundsel* | *Baccharis halimifolia* |
| Bearberry | *Arctostaphylos uva-ursi* |
| Beach-heather | *Hudsonia tomentosa* |

### 3. Herbaceous:

| Common Name | Scientific Name |
|---|---|
| American beachgrass | *Ammophila breviligulata* |
| Sea rocket | *Cakile edentula* |
| Seaside spurge | *Euphorbia polygonifolia* |
| Coastal panicgrass* | *Panicum amarum var. amarulum* |
| Seaside goldenrod** | *Solidago sempervirens* |
| Beach pea* | *Lathyrus japonicus* |
| Dusty miller | *Artemisia stelleriana* |
| Rough cocklebur | *Xanthium strumarium* |
| Prickly pear (cactus)* | *Opuntia humifusa* |

## B. Sheltered Upland Dune Vegetation

### 1. Trees:

| Common Name | Scientific Name |
|---|---|
| Pitch pine** | *Pinus rigida* |
| Eastern red cedar* | *Juniperus virginiana* |
| Sassafras** | *Sassafras albidum* |
| Hackberry** | *Celtis occidentalis* |
| American holly* | *Ilex opaca* |
| Scarlet oak** | *Quercus coccinea* |
| Blackjack oak** | *Q. marilandica* |
| Scrub oak** | *Q. ilicifolia* |
| Winged sumac** | *Rhus copallinum* |
| Smooth sumac** | *R. glabra* |
| Persimmon** | *Diospyros virginiana* |

### 2. Shrubs:

| Common Name | Scientific Name |
|---|---|
| Northern bayberry** | *Morella pensylvanica* |
| Wax myrtle* | *M. cerifera* |
| Beach plum* | *Prunus maritime* |
| Groundsel* | *Baccharis halimifolia* |
| Inkberry holly** | *Ilex glabra* |
| Low rose** | *Rosa carolina* |

### 3. Vines:

| Common Name | Scientific Name |
|---|---|
| Virginia creeper** | *Parthenocissus quinquefolia* |
| Trumpet vine* | *Campsis radicans* |

## B. Sheltered Upland Dune Vegetation (continued)

### 4. Herbaceous:

| Common Name | Scientific Name |
|---|---|
| Bitter panicgrass * | *Panicum amarum* |
| Coastal panicgrass* | *Panicum amarum* |
| Saltmeadow cordgrass | *Spartina patens* |
| Switchgrass** | *Panicum virgatum* |
| Bluestem | *Schizachyrium scoparium* |
| Seaside goldenrod** | *Solidago sempervirens* |
| Beach pea* | *Lathyrus japonicus* |
| Partridge pea* | *Chamaecrista fasciculata* |
| Rough cocklebur | *Xanthium strumarium* |
| Dusty miller | *Artemisia stelleriana* |
| Prickly pear* | *Opuntia humifusa* |
| Spanish bayonet* | *Yucca filamentosa* |
| Yarrow* | *Achillea millefolium* |
| Butterfly Milkweed** | *Asclepias tuberosa* |

## C. Sheltered Wetland Dune Vegetation (Interdunal Swales)

### 1. Trees:

| Common Name | Scientific Name |
|---|---|
| Red maple* | *Acer rubrum* |
| Serviceberry* | *Amelanchier arborea* |
| Shadbush* | *A. canadensis* |
| Southern red oak* | *Quercus falcata* |
| Willow oak* | *Q. phellos* |
| Black gum* | *Nyssa sylvatica* |

### 2. Shrubs:

| Common Name | Scientific Name |
|---|---|
| Maleberry* | *Lyonia ligustrina* |
| Black chokeberry * | *Photinia melanocarpa* |
| Red chokeberry* | *P. pyrifolia* |
| Inkberry** | I*lex glabra* |
| S, arrowwood** | *Virburnum dentatum* |
| Black huckleberry** | *Gaylussacia baccata* |
| Winterberry** | *Ilex verticillata* |

### 3. Herbaceous:

| Common Name | Scientific Name |
|---|---|
| Saltmeadow cordgrass | *Spartina patens* |
| Switchgrass** | *Panicum virgatum* |
| Spike grass | *Distichlis spicata* |
| Saltmeadow rush | *Juncus gerardii* |
| Salt-marsh bulrush | *Scirpus robustus* |
| Common threesquare | *S. pungen* |

# APPENDIX C.

# LIST OF ACCEPTABLE PLANTINGS FOR LANDSCAPES, STREETSCAPE AND PARKLANDS

# LIST OF ACCEPTABLE PLANTINGS
# FOR LANDSCAPES, STREETSCAPES AND PARKLANDS

The survival of many types of vegetation is difficult on a barrier island community such as the City of North Wildwood. Vegetation has to contend with nutrient poor, sandy soils, frequent northeast coastal storms, strong west winter winds and salt-laden air. These conditions make it difficult for most plants to develop and mature. Vegetation of all types, especially trees and shrubs, is of great value to the City to enhance absorption of run-off back into the soil, reduce air pollution, enhance habitats and stabilize soils. Trees and shrubs can mitigate noise issues and act as a windbreak. Accordingly, conservation of these natural resources is in the public interest, satisfies the purposes of zoning, and benefits those who dwell on and visit the island.

The following plant materials are considered to be acceptable for use in the City, provided appropriate planting considerations are accounted for. These species represent a wide variety of plantings, and care must be taken to ensure that proper species selection accounts for growing conditions and purpose. Additionally, species selection shall be predicated upon compliance with other City ordinances that may impact site-specific considerations, including but not limited to air circulation, canopy growth/spread, viewsheds, etc.

**Legend:**

Native Species

| | |
|---|---|
| 1 | Native to Cape May County |
| 2 | Native to New Jersey, but not to Cape May County |
| N | Not native to County or Region |
| C | Cultivar, not native species ecotype |

Salt Tolerance

| | |
|---|---|
| R | Resistant |
| I | Intermediate |
| S | Sensitive |

Suitable as Street Tree

| | |
|---|---|
| A | Minimum 4 foot wide unpaved area |
| B | 2-1/2 to 4 foot wide unpaved area |
| C | Less than 2-1/2 foot wide unpaved area |
| D | Suitable only if sight triangle is not at issue, or |
| N | Not suitable |

Suitable for residential landscape and parks if sight triangles and visibility are not at issue

| | |
|---|---|
| Y | Yes |
| N | No |

Note: A dash (--) designates information not available

**Shade Trees**

| Common Name | Scientific Name | Native | Salt Tol. | Street Tree | Lndscap/ Parks |
|---|---|---|---|---|---|
| Accolade Cherry | *Prunus sargentii* | N | -- | C | Y |
| Amanogawa Cherry | *P. serrulata* | N | -- | C | Y |
| American Hophornbeam | *Ostrya virginiana* | 2 | -- | B | Y |
| American Linden | *Tilia americana* | 2 | S | A | Y |
| American Redbud | *Cercis canadensis* | 2 | S | C | Y |
| Aurora Dogwood | *Cornus "Rutban"* | C | -- | C | Y |
| Bald cypress | *Taxodium distichum* | N | -- | -- | Y |
| Blackgum | *Nyssa sylvatica* | 1 | R | D | Y |
| Celestial Dogwood | *Cornus "Rutdan"* | C | -- | C | Y |
| Constellation Dogwood | *Cornus "Rutcan"* | C | -- | C | Y |
| Crape Myrtle | *Lagerstroemia indica L* | N | -- | B | Y |
| Crimson Cloud Hawthorn | *Rataegus oxycantha* | N | -- | C | Y |
| Cucumber Tree | *Magnolia acuminate* | 2 | S | C | Y |
| Cumulus Shadblow | *Amelanchier laevis* | 2 | S | C | Y |
| Downy serviceberry | *Amelanchier arborea* | 1 | -- | D | Y |
| Green vase Japanese zelkova | *Zelkova serrata "Green Vase"* | N | -- | -- | Y |
| Hackberry | *Celtis occidentalis* | 1 | R | B | Y |
| Honeylocust | *Gleditsia triacanthos* | 1 | R | A | Y |
| Lavalle hawthorne | *Crateagus X lavallei* | C | -- | -- | Y |
| Pin oak | *Quercus palustris* | 1 | -- | A | Y |
| Red Maple | *Acer rubrum* | 1 | S | A | Y |
| Regent Japanese scholar tree | *Sophora japonica "Regent"* | C | -- | -- | Y |
| River Birch | *Betula nigra* | 1 | -- | B | Y |
| Ruth Ellen Dogwood | *Cornus "Rutlan"* | C | -- | C | Y |
| Scarlet Oak | *Quercus coccinea* | 1 | -- | A | Y |
| Shadblow serviceberry treeform | *Amelanchier canadensis* | 1 | R | D | Y |
| Stellar Pink Dogwood | *Cornus "Rutgan"* | C | -- | C | Y |
| Sweetgum | *Liquidamber styraciflua* | 1 | I | -- | Y |
| Tulip tree | *Liriodendron tulipfera* | 1 | -- | -- | Y |
| Umbrella Tree | *Magnolia tripetala* | 2 | R | C | Y |
| White Flowering Dogwood | *Cornus florida* | 1 | -- | C | Y |
| White Oak | *Quercus alba* | 1 | R | A | Y |
| Willow oak | *Quercus phellos* | 1 | -- | D | Y |

**Evergreen Trees**

| Common Name | Scientific Name | Native | Salt Tol. | Street Tree | Lndscap/ Parks |
|---|---|---|---|---|---|
| American arborvitae | *Thuja occidentalis* | 2 | I | N | Y |
| American holly | *Ilex opaca* | 1 | S | D | Y |
| Atlantic white cedar | *Chamaecyparis thyoides* | 1 | -- | N | Y |
| Black spruce | *Picea mariana* | 2 | S | D | Y |
| Blue spruce | *Pi. pungens* | N | R | D | Y |
| Eastern red cedar | *Juniperus virginiana* | 1 | R | D | Y |
| Elizabeth Magnolia | *Magnolia "Elizabeth"* | C | -- | D | Y |
| Juniper – upright | *Juniperis chinensis spp. Or Robusta Green* | N | -- | D | Y |
| Leyland cypress | *Cupressocyparis leylandii* | N | -- | D | Y |
| Maritime pine | *Pinus pinaster* | N | I | D | Y |
| Monterey pine | *P. radiata* | N | I | D | Y |
| Pitch pine | *Pinus rigida* | 1 | R | N | N |
| Red pine | *P. resinosa* | 2 | S | D | Y |
| Red spruce | *Picea rubens* | 2 | -- | D | Y |
| Southern Magnolia | *Magnolia grandiflora* | N | R | D | Y |
| Sweet Bay | *M. virginiana* | 1 | R | D | Y |
| Swiss stone pine | *Pinus cembra* | 1 | S | D | Y |
| Virginia Pine | *P. virginiana* | N | -- | D | Y |
| Wanda's Memory Magnolia | *Magnolia "Wanda's Memory"* | 1 | -- | N | Y |
| White fir | *Abies concolor* | C | S | D | Y |
| White pine | Pinus strobus | 1 | S | D | Y |
| White spruce | Picea glauca | N | S | D | Y |

**Shrubs**

| Common Name | Scientific Name | Native | Salt Tol. |
|---|---|---|---|
| Arrowwood | *Viburnum dentatum* | 1 | I |
| Bayberry | *Morella pennsylvanica* (prev. *Myrica)* | 1 | R |
| Beach plum | *Prunus maritima* | 1 | R |
| Blackhaw | *Viburnum prunifolium* | 1 | -- |
| Carolina rose | *Rosa carolina* | 1 | S |
| Chinese juniper | *Juniperus chinensis & cultivars* | N, C | I |
| Common lilac | *Syringa vulgaris* | N | -- |
| Common waxmyrtle | *Morella cerifera* formerly *Myrica* | 1 | I |
| Crape myrtle | *Lagerstroemia indica* | N | S |
| Groundsel | *Baccharis halimfolia* | 1 | R |
| Hydrangea | *Hydrangea macrophylla & cultivars* | N, C | -- |
| Inkberry | *Ilex glabra & cultivars* | 1, C | I |
| Red chokeberry | *Aronia arbutfolia* | 1 | I |
| Shore juniper | *Juniperus conferta & cultivars* | N, C | I |
| Summersweet | *Clethra alnifolia & cultivars* | 1, C | I |
| Winterberry holly | *Ilex verticillata* | 1 | S |

**Specifications:**

1. Selection of the tree or shrub species and cultivar shall be appropriate to the planting location, site conditions and purpose.
2. Plants shall be typical of their species and variety, have normal growth habits, well developed branches and vigorous root systems, and be densely foliated, and shall be free from defects, injuries, diseases and infestation.
3. Quality, branching and size of plants, including root size, shall be in accordance with "American Standards for Nursery Stock" ANSI Z60 (Most Recent Edition) as published by the American Association of Nurserymen.
4. Street and parking lot trees shall be pruned of any branches that interfere with pedestrians, vehicles or signs. Street trees must be single trunk, full and uniform specimens.
5. Street trees shall have a single stem with no branches lower than the height of 6.5 ft.
6. Street tree and shade tree caliper sizes shall be measured six (6) inches above the ground for specimens up to, and including 4" caliper, and measured twelve (12) inches above the ground for specimens greater than 4" caliper, in accordance with the latest edition of the American Standard for Nursery Stock (ANSI Z60.1)
7. Because of the spread of disease and the effects of insects on pine trees, if they are planted, they must be carefully monitored and removed on the first signs of deterioration.

**Invasive and nuisance plants:**

No invasive or nuisance plants (weeds) shall be introduced into the Borough along with any landscaping plants. The following is a partial list of plants that have been designated as invasive, i.e., they tend to spread rapidly, or nuisance plants. It is not recommended that they be used or distributed accidentally in any proposed planting program:

Asian bittersweet (*Celastius orbiculatus*)
Autumn olive (*Eleagnus umbellate)*
Butterfly bush (*Buddleia davidii*) – moved from Shrub list
Danes rocket (*Hesperis matronalis*)
English ivy (*Hedera helix*)
Japanese barberry (*Berberis thumbergio)*
Japanese black pine *(Pinus thunbergiani)*
Japanese honeysuckle *(Lonicera japonica)*
Japanese Knotweed *(Fallopia japonica)*
Japanese Stiltgrass *(Microstegium vimineum)*
Mimosa or Silk Tree (*Albizia julibrissin*)
Multiflora Rose *(Rosa multiflora)*
Norway maple (*Acer platanoides*)
Privet (*Ligustrum ovalifolium*) – moved from Shrub list
Porcelain berry *(Ampelopsis brevipedunculata)*
Purple loosetrife (*Lythrum salicaria*)
Rugosa rose (*Rosa rugosa*)
Russian olive (*Eleagnus angustifolia*)
Tree of Heaven (Ailanthus altissima)
Wisteria (*Wisteria frutescens*)

Because of the ability of the following plants to spread at an extremely fast rate they are not to be used in any location:

Bamboo Grass family (Poaceae), including but not limited to Common bamboo (Bambusa vulgaris), Golden bamboo (Phyllostachys aurea), Arrow bamboo (Pseudosasa japonica)
Japanese sedge (C*arex kolomugi*)
Kudzu-vine (*Pueraria montana*)
Mile a minute vine (*Polygonum perifoliatum*)
Phragmites (*Phragmites australis*)

The following plants have been determined to be susceptible to the destructive Pear Trellis Rust fungus and are not recommended for use in any proposed planting program:

Bradford pear and cultivars such as Aristocrat or Cleveland Select pear (*Pyrus calleryana 'Aristocrat' or 'Cleveland* Select')

# APPENDIX D.
# PROTOCOLS FOR CONTROL OF DAMAGING VINES

# PROTOCOLS FOR
# CONTROL OF DAMAGING VINES

A portion of healthy vegetation program entails rescuing, significant stands of native vegetation from the damaging affects of densely concentrated stands of damaging vines. Key to vine control is checking the unrestricted expansion of the damaging vines; bringing the vines into balance with natural stands of vegetation, especially in dune and wetland ecotone biotic communities.

Vine control is proposed to be accomplished by the following approach:

1. Taking care to not cut native tree sapling or shrubs, cut a 3 foot section of vines, beginning at the ground surface of the soil. Allow the cut 3 foot section to decompose on the ground. The cut portions of the vines extending into the trees will be left in place to die and decompose. Where dense local monocultures of vines occur, cut the vines at the base and leave them in place to decompose.

2. Identify appropriate portions of the areas where the damaging vines have been cut for native plant replacement. Use only native trees and shrubs identified in the Lists of Acceptable Plantings contained in the Public Lands Vegetation Management Plan, based upon availability and costs. Principal native species should include, at a minimum, the species identified for distinct types of planting areas (e.g., dunes, streetscapes, parklands, etc.)

   Native vegetation should be planted consistent with the Public Lands Vegetation Management Plan in early spring or late fall. Since no or limited supplemental watering is available, appropriate soil amendments such as Terra-sorb, the moisture absorbing hydrogel, and mulch should be used where practical.

3. Monitor growth of the planted vegetation and monitor re-growth of the vines. Report findings to the City Department of Buildings, Parks and Grounds along with recommendations to continue non-invasive, cost-effective control measures.

4. Maintain areas during the winter season where vines have been controlled using a weed trimmers to cut the re-growing vines at ground level. Care must be exercised to not damage or destroy non-vine, volunteer native vegetation and the planted vegetation.

5. Consider all effective control options; however, control efforts must be conducted during the winter when disturbance of resting or migrating wildlife is minimized. If herbicide treatment is considered as a control measure, safeguards must be in place to prevent inadvertently impacting native vegetation, only approved herbicides may be used and only properly briefed NJDEP-licensed commercial herbicide/pesticide applicator may be used.

6. Plant native trees and shrubs to compete with the vines, as discussed in #2.

7. Monitor the re-growth of the vines and every two to three years cut the emerging vines at the soil surface and leave in place to decompose.

The vine control program is necessary to return the biotic community balance to ensure biodiversity and structural integrity of the City's public lands.

# APPENDIX E.

# STANDARD FOR CREATING AND RESTORING SAND DUNES FROM MASSACHUSETTS TO NOTH CAROLINA

# STANDARD
# for
# CREATING and RESTORING SAND DUNES
**From Massachusetts to North Carolina**

Written by: Mike Fournier, Former PMC Manager

Edited by:
Christopher Miller, Regional Plant Specialist, USDA-NRCS
William Skaradek, Manager, Cape May Plant Materials Center

**DEFFINITION**: Effective establishment and maintenance of physical (living or inert) barriers which manage the surface movement of shifting coastal beach sands.

**PURPOSE**: To develop a system of coastal sand dunes to protect human lives, personal property, and community infrastructures. A secondary benefit of such developments is the creation and protection of critical habitat of threatened and endangered bird species.

**WHERE APPLICABLE**: Along ocean and bay shorelines; where blowing sands and storm waters may cause damage to human and wildlife resources.

**METHODS and MATERIALS**: Sand dunes naturally form on barrier islands, shorelines exposed directly to the ocean, and inland sand deposits. The source of this wind born sand is the ocean or its bays. These parallel ridges of sand form perpendicular to prevailing winds and grow toward its source of sand. Periodic storm events and human activity continually alter their development and original configuration. Once developed the sand dunes provide adequate protection from moderate storms and tides. The existence and maintenance of vegetation on dunes provides a network of root and foliage which holds unconsolidated sand in place. American beachgrass is the dominant, naturally occurring, vegetation of the frontal dunes of the northern Mid-Atlantic and New England coasts. From Vriginia beach southward through the Carolinas, sea oats becomes the dominant foredune plant. When beachgrass or sea oats are established with structural resources and other dune species, a formidable well-anchored storm barrier is established, capable of saving major public and private assets. Establishing curvilinear foot paths or wooden crosswalks through or over the sand dunes, bordered by sand fencing, is necessary where foot or vehicular traffic is expected.

## 1.VEGETATION

A. **Plant Materials**: The foliage of most sand dune species filters sand from the wind. The reduction of wind velocity near the dune's surface by vegetation allows sand to be deposited. The root mass of these plant species adapted to the sand dune environment are typically deep and extensive, anchoring the dunes to their foundation. When possible only certified cultivars, which have been tested on similar sites, should be utilized for protecting valuable coastal resources.

1).Cultivar Releases recommended for stabilizing sand dunes; all cultivars listed were released by the USDA- Natural Resources Conservation Service's Plant Materials Program:

a.) **'Cape'** american beachgrass (*Ammophila breviligulata*)
b.) **'Atlantic'** coastal panicgrass (*Panicum amarum var. amarulum*)
c.) **'Northpa'** bitter panicgrass (*Panicum amarum*)
d.) **'Avalon'** saltmeadow cordgrass (*Spartina patens*)
e.) **'Monarch'** seaside goldenrod (*Solidago sempervirens*)
f.) **'Wildwood'** bayberry (*Myrica pensylvanica*)
g.) **'Ocean View'** beach plum (*Prunus maritima*)
h.) **'Sandy'** rugosa rose (*Rosa rugosa*)
i.) **'Emerald Sea'** shore juniper (*Juniperus conferta*)

2.) Non-Cultivar Releases suitable for adding plant diversity on sand dunes:

a.) seashore little bluestem (*Schizachyrium scoparium* var. *littoralis*)
b.) sea oats (*Uniola paniculata*)
c.) switchgrass *(Panicum virgatum*)
d.) partridge pea (*Chamaecrista fasiculata*)
e.) beach pea (*Lathyrus maritimus*)
f.) eastern red cedar (*Juniperus virginiana*)
g.) groundsel tree (*Baccharis halimifolia*)

**NOTE:** The cultivars listed were developed specifically for sand dune stabilization and should be specified and used when available. By using cultivars developed for such a harsh environment, the risk of plant failure is reduced.

In addition, when developing a planting plan for a dune system, it is imperative to plant species in their zone of adaptation. The species best adapted to the frontal dune face are american beachgrass, bitter panicgrass, and sea oats (Delmarva Penninsula and south). As you move onto the back of the frontal dune or into the secondary dune system, the additional species listed above may be incorporated into the planting as available. By broading the plant diversity, the risk of plant failure is further minimized. See (Diagram 1) for plant zonation guidelines.

## B. Plant Establishment

**1.) (Cape) american beachgrass** (*Ammophila breveligulata*)- Beachgrass is successionally classified as a pioneering type species; it is about the only species capable of surviving the harsh environmental conditions of the frontal dunes. For initially stabilizing a dune system, this species is the most reliable and commercially available option. Once established it rapidly spreads by a rhizomatous root system, developing a soil binding network of inter-woven roots.

Date = November 1 to April 1; under non-frozen soil conditions
Planting Unit = a minimum of two stems (culms) per hole
Method = hand placement, or use of a vegetable or tree planter
Size = 16 to 18 inch long stems, ≥ ¼ inch in diameter
Depth = culms placed approximately 8-10 inches deep
Spacing: severe sites = 12” X 12”
normal sites = 18” X 18”
stable sites = 24” X 24”
Notes:

- Plant ≥ 100 feet of horizontal distance from the mean high tide water line to ensure success
- Plant a minimum of 10 parallel rows; stagger (off-set) rows to maximize protection
- Firm soil around plants to eliminate air pockets
- If utilizing dredged fill allow salts to leach out before planting and rains to compact sands

2.) **(Northpa) bitter panicgrass** (*Panicum amarum*)**–** This perennial, warm-season grass with a prostrate growth habit spreads slowly from short, strong rhizomes initially forming open clumps. Over time these clumps can fuse to form a dense mat of vegetation. Since this grass produces little viable seed it must be planted vegetatively.

Date: potted plants = April 1 to May 1
bare root = November 1 to April 15
stem cuttings = April 1 to May 15
Planting Unit = single bare-root or containerized seedling or stem division; 12 - 18 inches tall
Depth: potted/bareroot = 2 inches deeper than the nursery depth
Stem cuttings= place on a 45 degree angle in a 8-10 inch hole or slit leaving the top 6-10" of stem exposed.
Method: plants = hand placed, or using a vegetable transplanter
Spacing: Potted/bareroot = 2 feet apart in 2-3 foot staggered rows.
Stem cuttings= minimum of three stems/hole, spaced 2 feet apart in staggered 2-3 foot rows

3.) **(Atlantic) coastal panicgrass** (*Panicum amarum var.amarulum*)- This warm season bunch-like grass is a post stabilization species thriving from the crest of the frontal dune to inland sites. It is the only dune stabilization species which has been directly seeded on to the sand dunes successfully. Potted plants and stem divisions can also be successfully established on these severe sites. The annual foliage emerges from a deep fibrous perennial root system with short lateral rhizomes. This species can be successfully planted with or over seeded into stands of American beachgrass. The closely related switchgrass is not as well adapted to sand dune conditions due to its lower seedling vigor. However, it is a good alternative, especially north of Long Island where coastal panicgrass is not native.

Date: Seeding: over seeding = April 1 to May 1
Dormant seeding = November 1 to April 15
Planting = April 1 to May 15
Planting Unit = single bare-root or containerized seedling or division; 12 - 18 inches tall
Seeding rate = 8 to 12 Lbs. of Pure Live Seed (PLS) per acre
Depth: plants = 2 inches deeper than the nursery depth
seed = drilled 1½ to 2½ inches deep
Method: seed = hand broadcast/incorporated, garden seeder (single row, push) or mechanically operated drill or drop seeder

plants = hand placed, or use a vegetable or tree transplanter

Spacing: plants = place 2-4 feet apart within a row with rows spaced 6-8 feet apart
seed = 3' to 10' row spacing

4.) **Sea oats** (*Uniola paniculata*)- **Adapted only south of the Delaware Bay (Delmarva Pennisula & south).** Within it's range, sea oats is the most important plant in the pioneer (frontal dune) zone. Like beachgrass, it flourishes best where sand is drifting and accumulating. However, unlike beachgrass, it persists as a perennial cover after the sand has been stilled but dies back to the ground over the winter. For initial stabilization of a sand dune, it is best to interplant both species.

Date = March 1 to April 15
Planting Unit = one bare-root or potted plant
Depth = 2 inches below the nursery grown depth
Method = hand placed, or vegetable planter
Size = ≥ 24-36 inch stem
Spacing = 18 to 36 inch row spacing with plants placed 18 inches apart within a row. May be interplanted with american beachgrass by alternating rows of each species.

5.) **(Avalon) saltmeadow cordgrass** (*Spartina patens*)- Although typically associated with tidal salt marshes, saltmeadow cordgrass also naturally occurs in the secondary and back dune areas. Predominantly inhabiting inter-dune troughs and low blow-out areas. It is dominate in these micro-sites since most other sand dune species can not tolerate wet to saturated soil conditions. The trailing rhizomes of saltmeadow cordgrass are slender, but form dense mats near the surface. It is vegetatively established on normal sites using freshly harvested stems (culms) or containerized plants on severe locations.

Date = May 1 to June 15
Planting Unit = 3 to 5 live stems placed bare-root or containerized
Depth = 2 inches below the nursery grown depth
Method = hand placed, or vegetable planter
Size = ≥ 12 inches
Spacing = 18 to 36 inches depending on the severity of the planting site
Notes: Utilize this species in low elevation sites of sand dunes which are frequently moist or inundated.

6.) **Switchgrass** (*Panicum virgatum*)– This warm-season, bunchgrass commonly grows in back dune swales and upper margins of tidal marshes. Seedling vigor is lower than in the closely related coastal panicgrass and therefore is not as well adapted for seeding on actively shifting sand dunes. However, switchgrass is a good alternative to coastal panicgrass north of Long Island, which is beyond the native range of coastal panicgrass.

Date: Seeding: over seeding = April 1 to May 1
dormant seeding = November 1 to April 15
planting = April 1 to May 15
Planting Unit = single bare-root or containerized seedling or division; 12 - 18 inches tall
Seeding rate = 8 to 12 Lbs. of Pure Live Seed (PLS) per acre
Depth: plants = 2 inches deeper than the nursery depth
seed = drilled 1½ to 2½ inches deep
Method: seed = hand broadcast/incorporated, single row garden seeder, or mechanically operated drill or drop seeder
plants = hand placed, or use a vegetable or tree planter
Spacing: plants = 4' X 4'
seed = 3' to 10' row spacing

7.) **Seacoast bluestem** (*Schizachyrium littorale*)**–** This native, warm-season grass is a coastal variation of the inland little bluestem. It differs visually with a more prostrate growth habit. Found in scattered open clumps in the back dunes, it rarely forms a solid stand, but is found mixed with other species such as beach heather, seaside goldenrod, beachgrass, bayberry, beach plum.

Date = March 1 to April 15
Planting Unit = one bare-root or potted plant
Depth = 2 inches below the nursery grown depth
Method = hand placed or vegetable planter
Size = ≥ 12-24 inch stem
Spacing = 24 to 36 inch row spacing with plants placed 24 inches apart within a row. Plant in the backdunes where sand is stable. May be interplanted with switchgrass, coastal panicgrass, saltmeadow cordgrass, seaside goldenrod, and beach or partridge pea.

***8.)*** **(Monarch germplasm) seaside goldenrod** (*Solidago sempervirens*) – This perennial forb adds color and variety to a dune planting. It is a major food source on the fall migration of the Monarch butterfly. From it's inconspicuous green basal leaves in winter into early summer arises a brilliant yellow flower cluster in early fall. Although often blamed for causing allergies, it is actually an insect pollinated plant. (Ragweed is the real culprit).

Date = March 1 to May 15
Planting Unit = one bare-root or potted plant
Depth = 2 inches below the nursery grown depth
Method = hand placed or vegetable planter
Size = ≥ 12-18 inch stem
Spacing = 24 to 36 inch row spacing with plants placed 24 inches apart within a row. Plant in the backdunes where sand is stable. May be interplanted with switchgrass, coastal panicgrass, saltmeadow cordgrass, and beach or partridge pea.

**9.)** **Beach pea and partridge pea** (*Lathyrus maritimus/Chamaecrista fasciculata*) Beach pea is adapted from New Jersey- north and partridge pea, an annual reseeding legume, from Massachusetts to the Carolinas. These native legumes have good wildlife value as edible seed for both upland game and shore birds.

**Partridge pea (seed only)**
Date: Seeding: over seeding = April 1 to May 15
dormant seeding = November 1 to April 15

Seeding rate = 2-4 pounds of Pure Live Seed (PLS) per acre.

Depth: = seed drilled 1½ to 2½ inches deep in stilled sand

Method: seed = hand broadcast/incorporated, single row garden seeder, or mechanically operated drill or drop seeder

**Beach pea (plants only)**
Planting Unit = single bare-root or containerized seedling or division; 12 - 18 inches tall
planting = April 1 to May 15

Depth: plants = 2 inches deeper than the nursery depth
Method: plants = hand placed, or use a vegetable or tree planter
Spacing: plants = 4' X 4'
seed = 3' to 10' row spacing

**10.) Shrubs and Trees** (bayberry, beachplum, rugosa rose, groundsel)- Medium sized shrubs and small trees naturally dominate the back dune zone of New Jersey's barrier islands. The shrubs begin to co-inhabit the mid secondary dunes. Once extensive stands of bayberry, beach plum, pitch pine and other woody species covered these islands where houses now stand. The shrub species which are well adapted to the dune ecosystem are capable of either layering or root suckering. The trees and shrubs of the sand dunes have deep tap root systems for supplying adequate moisture and nutrients. Each species utilized for back dune stabilization has its own unique attributes Beach plum has a colorful bloom in spring which yields a tasty succulent cherry like fruit. Bayberry roots have nodules which enable it to fix atmospheric nitrogen similar to legumes; it also produces aromatic fruit and leaves. The thorny stems of rugosa rose are useful in directing pedestrian traffic along established access trails. This rose species also blooms from late spring to early fall, then gives rise to a bright red fruit. The pines and junipers which are adapted to sand dunes provide the visual appeal of evergreens in the back dunes. The major function of tree and shrub vegetation on sand dunes is still the permanent solid structural stabilization. All of trees and shrubs of the sand dunes produce viable seed, but intentional establishment occurs using bare-rooted or potted seedlings.

Date = March 15 to April 15; unless soil is frozen
Planting Unit = 1/0 or 2/0 bare-root seedlings or containerized transplants
Depth = 2 inches below the nursery grown depth
Method = hand placement or using a tree planter
Size = $\geq$ 12 inches tall
Spacing = 4 to 6 feet apart; off-set (stagger) rows for maximum protection
Notes: to ensure establishment (first 2 years) all competing vegetation must be removed from within 2 feet of each plant; it

is important not fertilize the surrounding vegetation which will potentially out-compete the tree or shrub

C. **Maintenance**

1) Fertilizer

Date = May through July; no sooner than 30 days after planting

Rate = ≤ 50 lbs. of nitrogen (N) per acre, ≤ 25 lbs. of phosphorus (P) and potassium (K) per acre

Frequency :

- Apply N for the first two years after planting, then as needed to maintain stem density and plant health.
- Single or split applications are acceptable if not applied before May 1 or after July 30. Split applications must be at least 30 days apart.
- It is only necessary to apply P and K bi-annually

Recommended Formulations:

- 10-10-10, 20-10-10, 15-10-10, etc. are acceptable as long as the maximum rates per nutrient are not exceeded
- Time release fertilizers are encouraged that will provide the target amounts of the primary nutrients per acre.

Notes:

- Only apply fertilizer to within the drip line of shrubs and trees. Not following this rule will result in excessive herbaceous growth, which will out compete newly established trees and shrubs.
- Apply using broadcasting machinery

2.) Replant:

- Like a chain, a dune system is no stronger than its weakest link. Uniform, unbroken dune lines are essential to the protection a system can provide.
- Uncontrollable events (i.e. storms, construction, etc.) may damage sand dunes. If such damage occurs between October and April replant within a month. If the damage is experienced from May to September, utilize the outlined sand fencing or excavation procedures listed below, then plant during the recommended establishment period .

2. **SAND FENCING**: A quick and effective way to build temporary sand dunes is with the use of sand fencing (standard snow fence). Utilizing lines of

fencing and wooden posts, orientated parallel to the beach. A source of sand is necessary for this technique to be effective, but it is not limited by time of establishment.

A. **Materials**

1) Fencing:
   - Standard 4 ft. slatted wood snow fencing; wood must be decay free
   - Four wire ties ($\geq$ 12 ga.) must be used to secure fencing to each post.

2) Posts:
   - Wooden posts must be $\geq$ 6½ ft. long, with a minimum diameter of 3 inches; typical length ranges from 7 to 8 ft.
   - The posts should be made from black locust, eastern red cedar, Atlantic white cedar, or other species of similar durability and strength.
   - Space posts 10 ft. apart, and set them $\geq$ 3 feet deep

B. **Technique**

1) Position - orientate fence lines parallel to waterline of the beach, at least 140 feet from mean high tide (see figure 2)
2) Height - with adequate sand sources, dune elevations can be increased annually by at least four foot increments. (approximately the maximum height of the fencing, this can be increased with vegetation); The maximum dune height which is attainable will range from 12 to 15 feet, but is greatly influenced by prevailing wind velocities and sand grain size
3) Installation - weave fencing in front of and behind alternating posts to attain maximum strength
4) Number of Rows - 2 parallel rows spaced 30 to 40 feet apart, are ideal; but single rows with 30 ft. perpendicular spurs, spaced 40 ft. apart are also acceptable if space is a major limiting factor
5) Replacement - sand will typically fill fencing to ¾ of its total height at a maximum; upon reaching maximum fence capacity, additional lines of fence can be added until maximum planned dune height is reached; replace damaged fencing and posts within one month of storm damage to maintain a contiguous dune line

C. **Comments**

- This method is more expensive per linear foot than building dunes with vegetation alone, but less expensive than using earth moving machinery to construct dunes.
- Although dune height can be increased faster, it is limited by the fence height and ability to continually add more lines of fencing.
- Planting parallel rows of vegetation on either side of fences is usually more effective than either vegetation or fencing techniques alone.
- When complementing fencing with vegetation, do not plant closer than ten feet and no further than 15 feet from the fence lines. Vegetative strips should be about 20 ft. wide

3. **MECHANICAL EXCAVATION**

- With the use of various earth moving machines temporary, excavated sand dunes are quickly created.
- Since time is required for settling and cohesion to occur, such dunes are often short lived and only provide minimal protection to the public and private resources behind them.
- This method is often useful in the repair of storm damaged sand dunes during the fall and winter months. Any blow-out areas can be quickly filled.
- Front-end loaders of all sizes can be used. Various grading machines are also useful.
- Pumped sand from off shore dredging can be shaped and positioned with machinery

# APPENDIX F.

# LIST OF ACCEPTABLE PLANTINGS FOR LIVING FENCES

# LIST OF ACCEPTABLE PLANTINGS FOR LIVING FENCES

The following is a list of trees, shrubs and vines that have been used for living fences. If the living fence is properly designed, installed and maintained, it will provide service to the property owner for many years. Under the comment section of the list, C = climbing on lattice, F= flowering is significant, N = native species, S = spreading growth form, T = has thorns, U = upright, W = wildlife and ST = salt tolerant.

All plants in this list are known to survive in Hardiness Zone 7. Several species are drought tolerant and resistant to pests and diseases.

**Deciduous Shrubs**

| Common Name | *Scientific Name* | Comment |
|---|---|---|
| Five-leaf aralia | *Acanthopanax sieboldianus* | F,T,W,U |
| Southernwood | *Artemisia abrotanum* | |
| Flowering quince | *Chaenomeles speciosa* | F,T |
| Sweet pepperbush | *Clethra alnifolia* | F,N,W |
| Wax myrtle | *Morella cerifera* | N,W |
| Cornelia cherry | *Cornus mas* | F,W |
| Border forsythia | *Forsythia x intermedia* | F |
| Winterberry | *Ilex verticillata* | N,W |
| Mock orange | *Philadelphus x virginalis* | F |
| Beach plum | *Prunus maritime* | F,N,W,ST |
| Rose | *Rosa hybrids* | F,T,W |
| Spiraea | *Spiraea spp., not S. Japonica* | F,W |
| American cranberry-bush | *Viburnum trilobum* | F,N,W |

**Evergreen Shrubs**

| Common Name | *Scientific Name* | Comment |
|---|---|---|
| Inkberry holly | *Ilex glabra* | F,N,W,U,ST |
| Wilson's holly | *I. x altaclarensis* | W |
| Chinese holly | *I. cornuta* | W |
| Japanese holly | *I. crenata* | W |
| Needle point holly | *I.cornuta* | S,W,ST |
| Little red holly | *I. x 'Little Red'* | W |
| Bog-rosemary | *Andromeda glaucophylla* | F,N |
| Chinese juniper | *Juniperus chinensis* | W |
| Irish juniper | *Juniperus communis* | N,U |
| False holly | *Osmanthus heterophyllus* | F |
| Photinia | *Photinia x fraseri* | |
| Bayberry | *Morella pensylvanica* | N,W |
| Yew podocarpus | *Podocarpus macrophyllus* | U |
| Cherry laurel | *Prunus laurocerasus* | |
| Irish yew | *Taxus baccata cv. 'Fastigiata'* | |
| Yew | *Taxus canadensis* | N,W |
| Anglo Jap Yew | *Taxus media* | W |
| American arborvitae | *Thuja occidentalis* | N,W |

**Vines requiring lattice**

| Common Name | *Scientific Name* | Comment |
|---|---|---|
| Creeping snapdragon | *Ascarina spp.* | C,F |
| Cathedral bells | *Cobaea scandens* | C,F |
| Cypress vine | *Ipo moea quamoclit* | C,F |
| Morning glory | *I. purpurea* | C,F |
| Silver vine | *Actinidia polygama* | C,F |
| Dutchman's pipe | *Aristolochia durior* | C,F |
| Cross vine | *Bignonia capreolata* | C,F |
| American bittersweet | *Celastrus spp., not C. orbiculatus* | C,F,W |
| Clematis | *Clematis spp.* | C,F |
| Woodbine | *Parthenocissus quinquefolia* | C,W,N |
| Climbing rose | *Rosa spp.* | C,F |
| Grapes | *Vitis spp.* | C,F,N,W |

**Specifications:**

1. Selection of the tree or shrub species and cultivar shall be appropriate to the planting location, site conditions and purpose.
2. Plants shall be typical of their species and variety, have normal growth habits, well developed branches and vigorous root systems, and be densely foliated, and shall be free from defects, injuries, diseases and infestation.
3. Quality, branching and size of plants, including root size, shall be in accordance with "American Standards for Nursery Stock" ANSI Z60 (Most Recent Edition) as published by the American Association of Nurserymen.
4. Street and parking lot trees shall be pruned of any branches that interfere with pedestrians, vehicles or signs. Street trees must be single trunk, full and uniform specimens.
5. Street trees shall have a single stem with no branches lower than the height of 6.5 ft.
6. Street tree and shade tree caliper sizes shall be measured six (6) inches above the ground for specimens up to, and including 4" caliper, and measured twelve (12) inches above the ground for specimens greater than 4" caliper, in accordance with the latest edition of the American Standard for Nursery Stock (ANSI Z60.1)
7. Because of the spread of disease and the effects of insects on pine trees, if they are planted, they must be carefully monitored and removed on the first signs of deterioration.

**Invasive and nuisance plants:**

No invasive or nuisance plants (weeds) shall be introduced into the Borough along with any landscaping plants. The following is a partial list of plants that have been designated as invasive, i.e., they tend to spread rapidly, or nuisance plants. It is not recommended that they be used or distributed accidentally in any proposed planting program:

Asian bittersweet (*Celastius orbiculatus*)
Autumn olive (*Eleagnus umbellate)*
Butterfly bush (*Buddleia davidii*) – moved from Shrub list
Danes rocket (*Hesperis matronalis*)
English ivy (*Hedera helix*)
Japanese barberry (*Berberis thumbergio)*
Japanese black pine *(Pinus thunbergiani)*
Japanese honeysuckle *(Lonicera japonica)*
Japanese Knotweed *(Fallopia japonica)*
Japanese Stiltgrass *(Microstegium vimineum)*
Mimosa or Silk Tree (*Albizia julibrissin*)
Multiflora Rose *(Rosa multiflora)*
Norway maple (*Acer platanoides*)
Privet (*Ligustrum ovalifolium*) – moved from Shrub list
Porcelain berry *(Ampelopsis brevipedunculata)*
Purple loosetrife (*Lythrum salicaria*)
Rugosa rose (*Rosa rugosa*)
Russian olive (*Eleagnus angustifolia*)
Tree of Heaven (Ailanthus altissima)
Wisteria (*Wisteria frutescens*)

Because of the ability of the following plants to spread at an extremely fast rate they are not to be used in any location:

Bamboo Grass family (Poaceae), including but not limited to Common bamboo (Bambusa vulgaris), Golden bamboo (Phyllostachys aurea), Arrow bamboo (Pseudosasa japonica)
Japanese sedge (C*arex kolomugi*)
Kudzu-vine (*Pueraria montana*)
Mile a minute vine (*Polygonum perifoliatum*)
Phragmites (*Phragmites australis*)

The following plants have been determined to be susceptible to the destructive Pear Trellis Rust fungus and are not recommended for use in any proposed planting program:

Bradford pear and cultivars such as Aristocrat or Cleveland Select pear (*Pyrus calleryana 'Aristocrat' or 'Cleveland* Select')

# APPENDIX G.

# CITY OF NORTH WILDWOOD
# PUBLIC LANDS PHOTOGRAPHS

**Photo 1. Oceanfront Dune Complex**
View east along a typical beach access path to the ocean over the dunes. Note: Poison ivy is a dominant species growing along the margins of the access path creating potential public safety hazards.

**Photo 2. Bike Path**
View of south along the bike path. Note: Common reedgrass (*Phragmites*) is a dominant species growing along the margins of the path; Japanese black pine growth is apparent in localized areas as well.

**Photo 3. Bike Path Playground**
View northeast of the playground edge along the bike path. Note: Abundance of damaging vines climbing over the wall and through the vegetation causing die-back.

**Photo 4. Oceanfront Dune Complex**
View north along the oceanside dune crest. Note: Sparse areas in need of supplemental herbaceous plantings in foreground and invasive species in the back dune area depicted in background.

**Photo 5. Oceanfront Dune Complex**
View south of dune crest and back dune. Note: Sparse areas in need of supplemental herbaceous plantings in foreground and invasive species in the back dune depicted in background.

**Photo 6. Natural Areas along the Seawall**
View south of advanced Japanese black pine growth within the natural public lands along the seawall. Note: Native species displacement and obstructed viewsheds.


**Photo 7. Hereford Inlet Park**
View east of the Hereford Inlet Park maintained gardens adjacent to the back dune. Note: Invasive species in background encroaching into garden areas and displacing native species within the back dune.

**Photo 8. Park Access Paths**
View south of park access path. Note: Abundance of vines climbing over the fencing and through the vegetation.

**Photo 9. Naturalized Areas of Hereford Inlet Park**
View west of the back dune within Hereford Inlet Park. Note: Invasive species (Japanese black pine and common reedgrass) naturalizing within the dune complex and displacing native species.

**Photo 10. Hereford Inlet Lighthouse**
View east of the Hereford Inlet Lighthouse and Gardens. Note: Views of this prominent historic feature are partially obstructed by screens of Japanese black pine.

**Photo 11. Hereford Lighthouse Gardens Buffer**
View of planted vegetation screening within Hereford Inlet Lighthouse and Gardens. Note: The use of invasive species creates unchecked proliferation of rhizome growth for bamboo and seed stock for Japanese black pine, respectively.

**Photo 12. Hereford Inlet Lighthouse and Park Obstructed Views**
View west of the Hereford Inlet Lighthouse and Gardens from the seawall. Note: Views of this prominent historic feature are obstructed by a proliferation of Japanese black pine resulting in native species displacement.

**Photo 13. Albert Allen Memorial Park**
View west of maintained landscapes within Albert Allen Memorial Park. Note: Opportunity exists to replace previously planted invasive species, limit non-native ornamental species, and showcase native species adapted to the coastal growing conditions.

**Photo 14. Albert Allen Memorial Park Marsh Edge**
View of planted vegetation screening along the marsh edge of Albert Allen Memorial Park. Note: The use of invasive species creates unchecked proliferation Japanese black pine seed stock. Opportunities exist for native plantings as replacements.

**Photo 15. Albert Allen Memorial Park Invasives**
View of naturalized vegetation along the rear fence line of Albert Allen Memorial Park. Note: Invasive species (common reedgrass) dominate this margin displacing native species and resulting in unchecked proliferation of rhizome growth that will continue to spread into and damage the park grounds.

**Photo 16. City Hall**
View of landscaped grounds at City Hall and street trees along Atlantic Avenue.


**Photo 17. Bill Henfey Park**
View of landscaped grounds at Bill Henfey Park and street trees along Central Avenue.


**Photo 18. Oak Avenue Park**
View of landscaped grounds at Oak Avenue Park and street trees along Oak Avenue.

**Photo 19. Bayfront Park**
View south of Bayfront Park waterfront facilities and open space areas that could support plantings as part of future site improvements.

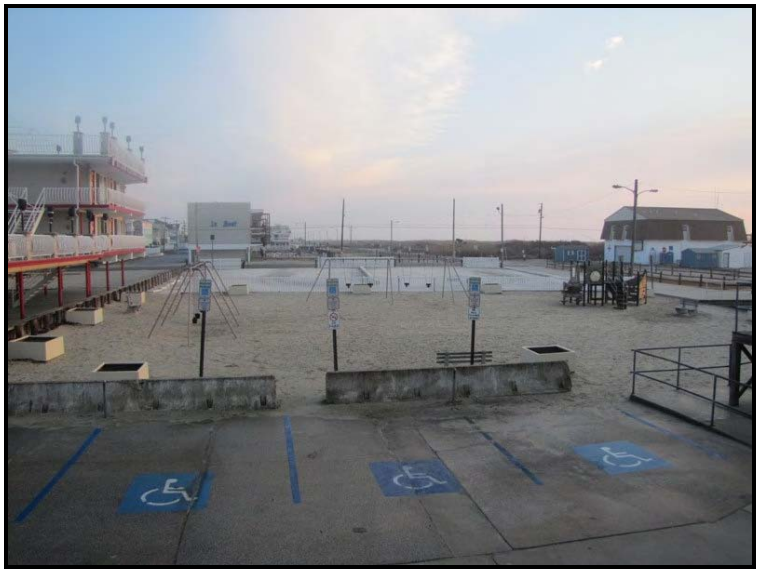

**Photo 20. Beachfront Boardwalk Park**
View northeast of Beachfront Boardwalk Park playground facilities, including planters and open space areas that could support plantings as part of future site improvements.

**Photo 21. Public Works**
View northeast of the Public Works facility street frontage along Oak Avenue.


**Photo 22. Recycling Center**
View south of the Recyling Center facility street frontage along Oak Avenue.

**Photo 23. Community Center**
View west of the Community Center facility street frontage along Central Avenue.

**Photo 24. Central Avenue Traffic Islands**
View north of the planted traffic islands that form the median of Central Avenue.


**Photo 25. Veterans Park Gateway**
View east of the signage, hardscaping and plantings within the Veterans Park that serve as a gateway into the City.

**Photo 26. Veterans Park Gateway**
View east of the signage, hardscaping and plantings within the Veterans Park that serve as a gateway into the City.

**Photo 27. Coastal Marsh Complex**
View west of typical coastal marsh conditions on the bayside of the City.

# APPENDIX H

- **REQUEST FOR JURISDICTIONAL DETERMINATION TO NJDEP**
- **APPROVED JURISDICTIONAL DETERMINATION FROM NJDEP**

the LOMAX Consulting group

P. O. Box 9 (mailing)
1435 Route 9 North (delivery)
Cape May Court House, NJ 08210, USA

609-465-9857 (p)
609-465-2449 (f)
www.lomaxconsulting.com

**Peter L. Lomax, President**
**(609) 465-9857 ext. 13**
**plomax@lomaxconsulting.com**

June 3, 2016
***Via UPS Delivery***

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, NJ 08625-0420
ATTN: Application Support

RE: Coastal Jurisdictional Determination
Bl/Lt: various (city-wide plan)
City of North Wildwood, Cape May County, New Jersey
TLCG File No: 14-871

Dear Application Support Agent:

On behalf of the City of North Wildwood, please accept this request for a Coastal Jurisdictional Determination specific to implementation of the City's Public Lands Vegetation Management Plan (PLVMP). The City's Community Forestry Working Group developed the PLVMP in coordination with its Community Forestry Management Plan. Both Plans have been reviewed and adopted by City Council. Attached please find the following for your review and reference:

1. One (1) completed copy of the Coastal Jurisdictional Determination Checklist *(Attachment 1)*
2. One (1) copy of the "Public Lands Vegetation Management Plan" (PLVMP), City of North Wildwood, dated March 2016 *(Enclosure)*
3. A complete written description of the project and all proposed activities *(included herein)*
4. One (1) copy of a USGS Quad Map (excerpt from the CFMP) outlining the site location *(Figure 1)*
5. Nine (9) pages of color photographs *(Appendix G of the PLVMP)*
6. Copy of the NJ State Forest Service Approval of the City of North Wildwood's "Community Forestry Management Plan", May 12, 2016 *(Enclosure)*.

## DESCRIPTION OF THE PROJECT SITE AND PROPOSED ACTIVITIES

The City of North Wildwood's vegetated public lands are a critically important and integral natural resource of the community that provide: (a) protective buffers dissipating coastal storm energy; (b) banks of sand to replenish the beach system during coastal storm events; (c) extensive and diverse habitats for local plants and wildlife adapted to coastal habitats; (d) protections for unique, sensitive maritime ecosystems; (e) green space in an otherwise urban setting; and (f) recreational opportunities. Accordingly, the City must engage in responsible stewardship practices to protect, enhance and manage these vital community resources.

This Vegetation Management Plan creates a science-based framework for the community to maintain its public lands in their natural state, where appropriate, and landscape in a manner compatible with the public interests and uses. It identifies specific roles of entities within the

community and the management standards that safeguard the integrity of the public lands, while allowing for active management and restoration. The Plan not only outlines the specifics of management practices to be applied in the field, but also provides for demonstration plantings to ensure that best management practices are being utilized based upon experience derived from actual operations within the City. Furthermore, the Plan defines the approval process to ensure that the goal of a healthy and diverse ecosystem is connected to the City's public policy process.

The City seeks a Coastal Jurisdictional Determination from NJDEP in order to confirm consistency with *N.J.A.C. 7:7 Coastal Zone Management Rules*.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,
THE LOMAX CONSULTING GROUP, LLC

Peter L. Lomax
President

cc: Mayor Patrick Rosenello, City of North Wildwood

# State of New Jersey
# Department of Environmental Protection

## COASTAL APPLICABILITY DETERMINATION CHECKLIST

**Revised: August, 2015** **Website: www.nj.gov/dep/landuse**

**CALL NJDEP AT (609) 777-0454 IF YOU HAVE ANY QUESTIONS**

**This checklist applies to applicability determinations under CAFRA, the Waterfront Development Law, and Wetlands Act of 1970. Please complete this form and submit it along with the below information to:**

**Regular mail**

NJ Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625-
**Attn: Application Support**

**For hand delivery, courier service and overnight mail**

NJ Department of Environmental Protection
Division of Land Use Regulation
501 East State Street
Station Plaza 5, Second Floor
Trenton, New Jersey, 08609
**Attn: Application Support**

1. Complete the following:

Applicant Name: City of North Wildwood
Address: 901 Atlantic Avenue
City: North Wildwood State: NJ Zip: 08260

Agent: Peter L. Lomax, The Lomax Consulting Group
Address: P.O. Box 9
City: C.M.C.H State: NJ Zip: 082104
Daytime Phone #: (609) 465-6700 E:Mail: plomax@lomaxconsulting.com

Project Location: Block(s): _____ Lot(s) _____
County: Cape May Municipality: North Wildwood
Site Address: _____
(or nearest crossroads)

2. Submit the following information along with a completed copy of this form:

A. A written description of the:

i. Site and the proposed development including the dimensions, number, and uses of any proposed structures;

ii. Length of any proposed linear development; and

iii. Number of any parking spaces proposed;

B A copy of the site plan and/or survey for the proposed project; and

C. A copy of a USGS quad map or local street map with the project site clearly indicated.

D. Color Photos of the site with photo location.

**OFFICIAL USE ONLY** - NJEMS Pre-Review Form

PI #: Activity #:

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Use Regulation
Mail Code 501-02A, P. O. Box 420
Trenton, New Jersey 08625-0420
www.state.nj.us/dep/landuse

CHRIS CHRISTIE
*Governor*

KIM GUADAGNO
*Lt. Governor*

BOB MARTIN
*Commissioner*

AUG 0 5 2016

City of North Wildwood
901 Atlantic Ave.
North Wildwood, NJ 08260

**Re: COASTAL JURISDICTIONAL DETERMINATION**
LUR File No.: 0507-16-0012.1
Activity Number: APD160001
Applicant: CITY OF NORTH WILDWOOD @ VARIOUS LOCATIONS
Block(s) and Lot(s): [N/A, N/A]
City of North Wildwood, Cape May County, New Jersey

Dear Sir or Madam:

This letter is in response to your request for a jurisdictional determination for the proposed PUBLIC LANDS VEGETATION MANAGEMENT PLAN, on the above referenced site within the CAFRA regulatory area in a non-qualifying municipality. Potentially applicable statutes include Waterfront Development Act (N.J.S.A. 12:5-3 et . seq.), Wetlands Act of 1970 (N.J.S.A. 13:9A-1 et. seq.) and the Coastal Area Facility Review Act, CAFRA, (N.J.S.A. 13:9-1 et. seq.).

Based on a review of the information submitted including site plans, entitled, "CITY OF NORTH WILDWOOD; PUBLIC LANDS VEGETATION MANAGEMENT PLAN; AERIAL OVERVIEW; CITY OF NORTH WILDWOOD, CAPE MAY COUNTY, NEW JERSEY", dated 10/30/15, and prepared by The Lomax Consulting Group, and a review of information as maintained on the Department's Geographic Information System the following determination is made:

Based on a review of the Coastal Permit Program Rules, the following determination is made:

**(X) A Waterfront Development permit is not required.**

Based on a review of the Coastal Permit Program Rules, the following determination is made:

**(X) A CAFRA permit is required.** Pursuant to N.J.A.C. 7:7-2.2, the proposed vegetation management plan outlines activities to take place on both the oceanfront and landward sides of existing dunes.

Based on a review of the Coastal Wetlands Maps, the following determination is made:

**(X) Coastal Wetlands permit is required**. Coastal Wetlands are mapped on this site. Activity is proposed at or below the Upper Wetlands Boundary.

This letter does not constitute a jurisdictional determination for the Freshwater Wetlands Protection Act Rules at N.J.A.C. 7:7A and the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-1.1 et seq. For assistance with the applicability of these statutes you are advised to contact the Division's Technical Support Center at (609)777-0454.

This letter does not relieve the applicant of the responsibility of obtaining any other required State, Federal or local permits or approvals as required by law and is based on the information submitted in accordance with existing regulation. This determination shall be considered null and void if the submitted information is incorrect, site conditions or regulations change.

Please contact William Kresnosky of our staff by e-mail at william.kresnosky@dep.nj.gov or (609) 777-0454 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

Sincerely,

Suzanne Dietrick, Manager
Division of Land Use Regulation

8/5/16
DATE

c: Bureau of Coastal and Land Use Compliance and Enforcement, Toms River
North Wildwood City Construction Official
Agent