



**DUNE VEGETATION MANAGEMENT PLAN
BOROUGH OF AVALON, CAPE MAY COUNTY, NJ
2020**



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TABLE OF CONTENTS
Dune Vegetation Management Plan

<u>SECTION</u>	<u>PAGE</u>
SECTION 1. INTRODUCTION.....	1
 SECTION 2. BACKGROUND	
2.1 Statement of Values of Dunes and Dune Vegetation.....	3
2.2 Statement of Issues Resulting from the Establishment of Non-native species.....	3
2.3 Dune Vegetation Management Planning.....	3
 SECTION 3. DUNE VEGETATION MANAGEMENT PLAN	
3.1 Goals of the Plan.....	5
3.2 Objectives of the Plan.....	5
3.3 Roles and Responsibilities.....	5
3.4 Management Standards.....	7
 SECTION 4. CONCLUSION.....	
SECTION 5. SELECTED REFERENCES.....	11
	12

APPENDICES

- APPENDIX A. Dune Distribution Aerial Photographs - 2020**
- APPENDIX B. Borough of Avalon Relevant Ordinances
Selected Sections:
(Chapter 9) – Parks, Beaches and Recreational Facilities
(Chapter 23) – Beach and Dune Protection
(Chapter 27) – Zoning Regulations**
- APPENDIX C. Communications with NJDEP**
- APPENDIX D. 2020 Dune Priority Mapping**
- APPENDIX E. DVMP Application Process**
- APPENDIX F. Draft Memorandum of Agreement**
- APPENDIX G. Approved List of Dune Vegetation**
- APPENDIX H. Example of Dune Restoration Plans**
- APPENDIX I. Dune Vegetation Pruning Protocols**
- APPENDIX J. Standard for Creating and Restoring Sand Dunes From
Massachusetts to North Carolina**

2020 DUNE VEGETATION MANAGEMENT PLAN

SECTION 1. INTRODUCTION

The dune system of the Borough of Avalon is a critical asset of the community. This dune system:

- (a) Serves the Borough as the front line of defense; a protective buffer dissipating coastal storm energy,
- (b) Accumulates sand within its vegetation to expand the dune size,
- (c) Contains a bank of sand to replenish the beach system during coastal storm events,
- (d) Supports a diversity of habitats for plants and wildlife adapted to the droughty sandy soils and salt spray conditions, and
- (e) Creates the unique aesthetic appeal of the Borough's oceanfront .

While the dune system is naturally occurring in the Borough, it has required management for more than forty years to retain its integrity and to preserve its unique maritime forest (**Dune Distribution Aerial Photographs (2020) 1, 2, 3 and 4 - Appendix A**).

Well-meaning dune protection efforts of earlier times have resulted in the introduction of a species that has had unintended consequences, i.e., by 2009 it had become a dominant feature in the back-dune area, displacing native species and demonstrating its aggressive invasive nature. Further it had spread into the primary dunes and created dense stands, essentially a monoculture in areas. The Japanese Black Pine (*Pinus thunbergii*) has become so well established in the back dunes adjacent to residences that it has resulted in stands that have produced thick cone/needle drop layers under the trees. This combustible tinder creates a potential for wildfires in close proximity to the adjacent residences. In addition, these stands have created a visual barrier impacting the value of the oceanfront properties. Finally, these stands of Japanese Black Pine (JBP) are displacing the diverse native species, thereby creating ecological instability in the dunes.

The emerging Japanese Black Pine monoculture has created a vegetative instability because of the susceptibility of this species to pests and pathogens. Dead and dying JBP became readily observable within the stands on the Island, as well as on the mainland. The main cause of the continued notable mortality rate of the JBP throughout the Borough has been identified as bark beetles, including the Southern Pine Beetle and Turpentine Beetle, that carry the Blue Stain Fungus. The JBP can defend against small numbers of these bark beetles, but if the infestation

reaches high enough levels, the tree declines and quickly dies becoming hazardous to the public because of failing branches and ultimately the trees. In addition, the significant accumulation of dead tinder creates a risk of fire in the dune system.

Infested trees are readily identifiable by discolored pine needles, small bore holes in the bark, sap tubes, small piles of sawdust around the base of the tree, and beetle galleries located under the bark. When a tree that has died due to infestation is finally removed, a blue stain is commonly visible throughout the cut trunk of the tree as a result of a fungus. Not only are the trees damaged by the large infestations of bark beetles, but the fungus restricts the trees ability to transfer water and nutrients between the roots and crown. The beetles spread quickly through dense stands of JBP, but move more slowly between trees that are separated by greater distances. As such, it has become necessary to establish a strategy to reduce or eliminate the adverse impact of this species while protecting the integrity of the Borough's dune system.

The State of New Jersey Forest Service provided a grant to the Borough to control a central node of infestation in the vicinity of the 48th Street beach path through the Maritime Forest. The infestation and associated infections continue to impact the JBP. As such, there is an ongoing need to address failing trees to protect the public from tree hazards and the risk of fire in the dunes. In addition to addressing the invasive JBP infestations, limited areas of bamboo have been located in the dunes. The bamboo has been resistant to control efforts such as frequent cutting for multiple years and even herbicide treatments.

An additional management challenge in the dunes has been the establishment of dense and damaging concentrations of vines. While some of the damaging vines are non-native invasives, such as Japanese Honeysuckle and English Ivy, some are naturally occurring but grow into and cover the native dune trees and shrubs, such as Poison Ivy, Virginia Creeper, Wild Grape and Greenbriar. These vines climb and grow over the natural vegetation canopy, weakening if not killing the trees on which they grow. All of these types of vegetation have a sufficiently damaging impact on the otherwise well-adapted vegetation to warrant continued control efforts to maintain a healthy dune system.

As seed producers, these vine species and JBP can regenerate significant stands of damaging vegetation if not managed. In the unique and high value Maritime Forest, control efforts include cutting and often removal of the damaging vegetation, in addition to monitoring the areas that contained mature trees and vines that produce seeds. Germination of these seeds causes the

re-establishment of these species where the mature vegetation has been previously removed. Seedling and saplings should be removed as they become recognized.

The damaging vines, noted above, are spread widely within the dune system, frequently distributed by resident and migratory birds. The only environmentally responsible control measure used in the Borough at this time is cutting the vines at their base (at the soil surface) and removing four to six feet of vine to eliminate the dead vines from being used by young vines as they attempt to grow into the tree/shrub complex.

Regarding the control of bamboo – prevention is the best solution since it is resistant to cutting and herbicide control efforts. Invasive bamboo should not be used for any purpose on the island.

SECTION 2. BACKGROUND

2.1 Statement of Values of Dunes and Dune Vegetation

The Borough of Avalon dune system is a critically important and integral natural resource of the community that provides: (a) a protective buffer dissipating coastal storm energy, (b) a bank of sand to replenish the beach system during coastal storm events, (c) an extensive and diverse habitat for barrier island native plants and wildlife adapted to the dune ecosystems, (d) protective habitat for the Borough's Maritime Forest, and (e) the unique coastal aesthetic appeal of the Borough. Accordingly, the stewardship of the Avalon dunes is, not only recognized as a model for community protection and coastal dune enhancement, but also is critical to the protection of the Borough and those that rely on this coastal ecosystem complex.

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

Invasive and damaging vegetation, such as the Japanese Black Pine and dense vine growth, have spread throughout the back dunes adjacent to residences at such an alarming rate that it has: (a) resulted in hazardous conditions associated with accumulated combustible tinder subject to wildfire in close proximity to residences and the Maritime Forest, (b) has resulted in monocultures that displaced native vegetation and has degraded natural habitat that are used by wildlife and plants adapted to the dune ecosystems, (c) subjected portions of the dune system to destabilization through the die back of this pine species when infested with bark beetles, and (d) has created an unacceptable visual barrier that impacts the value of the oceanfront properties. Therefore, it has become essential to examine this problem and to establish a strategy to reduce or eliminate the adverse impact of this species and damaging

vines, while protecting the integrity of the Borough's dune system.

2.3 Dune Vegetation Management Planning

The Dune Vegetation Management Plan (DVMP or Plan) was prepared and approved by the Borough (**Appendix B**), with agreement from the New Jersey Department of Environmental Protection (**Appendix C**), in 2009. The first pilot project was initiated in 2011. Since that time, approximately one half of the Borough's dune system has been restored using the Borough's DVMP protocols and sponsors' support. More than fifty DVMP projects sponsored by private individuals and small groups have resulted in freeing this half of the dune system from damaging/invasive vegetation. The distribution of Japanese Black Pine in the dune system is reviewed yearly and the 2019 Priority Mapping is presented in **Appendix D**. This Priority Mapping depicts areas where the densities of the invasive JBP warrant control, areas free of JBP and areas where DVMP projects have been completed or are in progress. Through the implementation of these projects over the past 10 years, changes and revisions have been made to the program to streamline the process, improve success of the projects, and as a primary goal to ensure the protection of the dune system. The updates and revisions, based on the operating experience of the DVMP program, are included herein.

SECTION 3. DUNE VEGETATION MANAGEMENT PLAN

3.1 Goals of the Plan

- 3.1.1 Maintain and enhance, where possible, a healthy, diverse dune system comprised primarily of native species;
- 3.1.2 Establish a science-based approach to evaluating and managing dune vegetation, in a manner to achieve the goals of the Borough.

3.2 Objectives of the Plan

- 3.2.1 To identify threats associated with invasive and/or damaging plant species in the dune system and to define the nature and extent of the related issues;
- 3.2.2 To continue to implement a DVMP that addresses control of damaging plant species;
- 3.2.3 To provide management standards and techniques that allow for the improvement of the vegetative component of the dune ecosystem; and
- 3.2.4 To identify, protect, and, where possible, restore dune vegetation die back areas.

3.3 Roles and Responsibilities

- 3.3.1 While the Borough maintains the overall health and integrity of the dune system; appropriate stewardship of the adjoining property owners and visitors is integral to the protection of this community asset. The Borough accomplishes this task by providing the public with proper education and signage that is relevant to protection of dune features. The Borough has delineated its dune system; those areas defined as dunes are available through the Office of the Construction Official. The extent of the dune system is presented in Photographs 1 to 4, inclusive in **Appendix A**. The Borough has laid out the framework for protecting its ocean-front assets by establishing and implementing protective ordinances (**Appendix B**) and the enforcement of these rules through its police powers. It should be noted that the Borough went through the process of obtaining a jurisdictional determination from The New Jersey Department of Environmental Protection (NJDEP) to make certain that management techniques set forth herein were in accordance with NJDEP regulations and policies. Please refer to **Appendix C** for a copy of the jurisdictional request and response documentation. Further, the Borough continues to support dune vegetation improvement programs through its Department of

Public Works and through volunteer beachgrass planting initiatives.

- 3.3.2 Property owners, especially those living adjacent to, or having, dunes on their property, play an important role in maintaining a healthy dune system. They have the unique opportunity to protect and enhance the dune system on or adjacent to their property by planting and managing compatible native vegetation and by aiding the Borough to monitor activities, such as unauthorized vegetation removal or topping of trees in the dunes that may result in damage to the dune system. While landscaping professionals may be contracted by property owners within the Borough to implement an approved DVMP project, the ultimate responsibility for actions inconsistent with the Borough ordinances falls on the property owners. Accordingly, various safeguards have been incorporated into the design of the DVMP. The safeguards provide an opportunity for addressing landowner concerns while providing guidance, public notification and Borough oversight through the Dune Vegetation Management Planning and implementation process.
- 3.3.3 Landowners and their landscape contractors, who intend to engage in any vegetation management activities in the dune system, must comply with the requirements of Chapter 9:10 et al as last revised by Ordinance 620 – 2009 (**Appendix B**) prior to taking any action. The DVMP Application Process checklist is provided in **Appendix E**. During the application process the Avalon Environmental Commission (AEC) will review the proposed actions and provide comments along with a decision to approve or deny a proposed DVMP project. If the proposed action is approved, the project sponsor is required to execute a Memorandum of Agreement (MOA) with the Borough that establishes the project scope and limitations, in addition to funding for the project. An example MOA is provided in **Appendix F**. Monitoring schedules shall be adhered to in order to ensure the success and survival of the plantings installed in the dunes. Proof of adequate training, certifications and insurance will be a requirement for landscape contractors prior to the commencement of work, as specified by the Borough.
- 3.3.4 While the Borough of Avalon assumed the role of facilitating the appropriate grants and aid for the development and implementation of the Dune Vegetation Management Planning process; financial responsibilities and obligations will be allocated in accordance with the MOA between private property owners (program sponsors) and the Borough of Avalon for the vegetation removal and replacement.

3.4 Management Standards

- 3.4.1 The establishment of Priority Dune Vegetation Management Areas (**Appendix D**) is essential to the overall success of the program. A prioritization system will allow the Borough to determine key areas where vegetation management is necessary on a priority basis to secure the integrity of the dune system and to ultimately protect the citizens of the Borough from damage associated with coastal storms from the failure of dead or dying trees.
- 3.4.2 In areas where the implementation of the Plan on regulated dunes includes both private and public property, a DVMP project with an associated MOA can be executed by the affected parties. This project will lay out the proposed vegetation management and the allocation of resources. Prior to the commencement of work on private property, adequate site documents are necessary such as surveys (if available) and tax map of the site. The **DVMP Application Process** checklist is provided in **Appendix E**.
- 3.4.3 Management action will be separated into the following three categories:
- (a) The immediate removal of the aerial portion of dead trees (rationale: dead trees are not vegetation and must be removed in the interest of public safety);
 - (b) The removal of seedling and sapling Japanese Black Pine (rationale: clipping the aerial portion of seedling and sapling prevents the maturation and production of offspring while preventing crowding and displacement of native vegetation). Invasive trees less than 6 feet in height will be hand sheered at ground level and the aerial portion of the seedlings / saplings will be removed;
 - (c) The removal of trees or trimming of damaging vegetation in accordance with the DVMP. Any mature trees that are removed will be cut at ground level. Heavy equipment will not be used in the dunes to remove such trees. Damaging vines will be cut at ground and at five to six feet above ground level (rationale: this vegetation management will result in elimination of tree and vine competition with the native vegetation and opening areas at ground level to provide space for the planting of replacement native species during the appropriate season).
- 3.4.4 Once the site maps have been provided, site investigations will be conducted. Site investigations must be consistent with the DVMP protocols to determine areas where tree management is appropriate. Trees that require management will be located and identified by species, size in terms of trunk diameter at breast height (dbh) and

condition; i.e. living or dead. This information will be plotted on the vegetation management/removal site plan. Trees that require management consistent with the DVMP will be identified and marked with survey flagging in the field. The sample representation of this concept prepared by The Lomax Consulting Group is presented in **Appendix H as Figure 1. Invasive Vegetation Location Plan.**

- 3.4.5 Following removal of invasive/damaging vegetation, native vegetation will be planted through the replacement process, utilizing a replanting plan developed specifically for the subject site. That plan requires a review by the Borough consistent with the DVMP requirements. A sample representation of this concept prepared by The Lomax Consulting Group is presented in **Appendix H as Figure 2. Planting Plan.** Vegetation selected for replanting should be species that are:
- (a) Native to New Jersey and preferably barrier islands in Cape May County;
 - (b) Drought tolerant;
 - (c) Less susceptible to pests and diseases;
 - (d) Less prone to wildfire; and
 - (e) Known to provide better habitat for native wildlife.

Please refer to the current **Approved List of Dune Vegetation** provided in **Appendix G.** This List, approved by the Avalon Environmental Commission, guides selection of native replacement vegetation according to salt spray tolerance of replacement plants and the ecosystem at the restoration location within the dune system.

- 3.4.6 Replacement plantings are selected, hardened, installed and maintained consistent with **Standards for Creating and Restoring Sand Dunes (Appendix J).** The holes should be twice the size of the plant container for shrubs and three times the size of the tree container or root ball. Soil amendments of topsoil and/or organic matter are used to back fill the hole to promote survivability of the plants. In addition, Terra-Sorb, or similar soil amendment, is recommended to be applied during planting to improve water retention for the new vegetation. Replacement plantings are recommended to be planted in clustered configurations.
- 3.4.7 Irrigation of the replacement plantings, in particular the shrub and tree plantings, is required to improve survivorship. Above ground drip or spray irrigation can be used. If spray irrigation is used, Hunter high efficiency MP rotator heads or similar spray heads

are recommended for the application of water. Irrigation lines shall be placed on the surface to avoid soil disturbance during installation and removal. Water shall be provided by the adjacent Project Sponsor or property owners. Irrigation shall be installed during planting and employed to support the plantings three times per week through the growing season, unless adequate precipitation negates the need. Irrigation requirements will be re-evaluated during yearly monitoring.

- 3.4.8 The replacement vegetation will be inspected in the fall to ensure successful plant establishment. Plant replacement is required for dead plants if survivorship falls below 85% or vegetative cover in the project area is below 85%.
- 3.4.9 Replacement plants will be maintained and may be trimmed to promote their health consistent with the approved Plan, as needed.
- 3.4.10 Pruning of existing native vegetation in proposed DVMP project areas is acceptable consistent with the **Dune Vegetation Pruning Protocols** provided in **Appendix I**. If pruning is proposed, the following restrictions must be adhered to:
- a) All pruning shall be by an experienced landscaper in conjunction with oversight by the Borough's representatives ;
 - b) All pruning shall be in compliance with ANSI A300 Standard Practices for Pruning;
 - c) Native trees shall not be pruned by more than 10% of their existing foliage or greater than 18 inches from the distal branches. Dead or dying branches shall be removed;
 - d) Native shrubs shall not be pruned by more than 10% of their existing foliage;
 - e) Damaging vines shall be bottom pruned from existing vegetation, and;
 - f) No topping of trees is permitted.
- 3.4.11 Safeguards to assure that the dune system is protected, to the maximum extent practical, have been incorporated into the design of the DVMP. They include:
- (a) Live native vegetation will be retained to the maximum extent practical;
 - (b) The entire root system of trees to be removed will be preserved in place without disturbance to maintain the stability of the dune system soils;
 - (c) Cutting and removal of the invasive trees will be accomplished using trained professionals;
 - (d) The utmost care is required during removal to ensure dune disturbance is avoided wherever possible, and;

- (g) The management process takes overriding safeguards to the next level by developing a concept that continuously preserves vegetation throughout the process;
- (h) The installation of a sand fence may be required along the ocean-side of any area proposed for management that is in close proximity to the foredune or beach areas to ensure that the planted native species will be sheltered from severe winds from the onset of the process (additional sand fence may be employed to minimize sand movements).

3.4.12 Pre-inspections and Post-inspections, including photo-documentation, of areas involved in dune management and restoration are incorporated into the project proposal. Reports of success of replacement native plants are submitted to the appropriate governing bodies for monitoring purposes. These reports will include an assessment of plant survival and coverage annually until the plants are established. The planting success and resulting site conditions are documented with photographs. Recommendations or necessary remedial actions are included in the yearly monitoring reports, when necessary.

3.4.13 Inspections and monitoring are important elements of the DVMP by providing continued feedback concerning the successes and necessary revisions of the Program. It is proposed that the Dune Priority Mapping (**Appendix D**) be used to track priority restoration areas and facilitate monitoring success of the DVMP. This visual representation is updated annually.

SECTION 4. CONCLUSION

The protection of the dune system by maximizing native dune vegetation and by the proper management of these natural resources is an important to the Borough of Avalon. Dune vegetation management extends beyond the scope of traditional environmental protection and natural resource conservation to a much broader array of public health and safety concerns. A well-maintained dune system provides a protective barrier from coastal storms for the community, dunes serve the first line of defense. This DVMP creates a framework for the Borough to manage the dune vegetation in its most beneficial and resilient state. The Plan identifies specific roles within the community and the management standards that safeguard the integrity of the dunes, while allowing for vegetation management and promoting dune restoration. This updated DVMP has been prepared following nearly 10 years of dune restoration projects and includes best management practices that have been utilized based upon experience derived from actual field operations within the Borough of Avalon. Accordingly, the DVMP is an integral part of the Community Forestry Management Plan. It incorporates public and governmental reviews, and ultimately has become an integral part of the Borough Master Plan and relevant Land Use Ordinances.

The Plan provides an opportunity for the Borough and the landowners to address, in a cooperative manner, dune vegetation management issues. In addition, the Plan establishes the operating standards and an agreement that the Borough and cooperating landowners can utilize to share dune vegetation management responsibilities and costs. In conclusion, the DVMP recognizes that the dune system of the Borough of Avalon is a critical asset of the community and requires continuing management to ensure that the dune system will continue to:

- a) Serve the Borough as a protective buffer dissipating coastal storm energy,
- b) Maintain a bank of sand to replenish the beach system,
- c) Support a diversity of habitats for adapted plants and wildlife and,
- d) Create unique aesthetic appeal of the community

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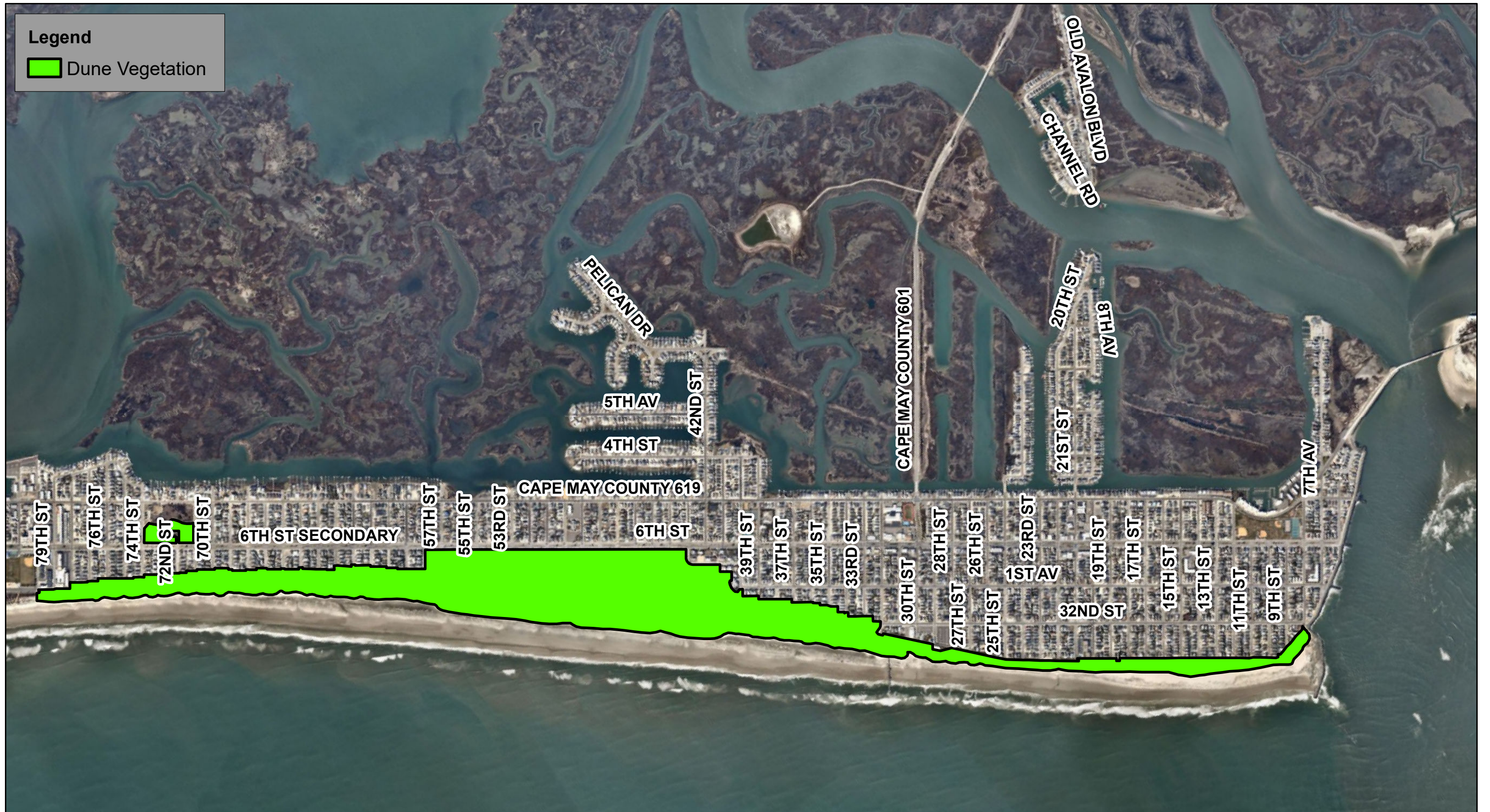
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APPENDIX A
Dune Distribution Aerial Photographs - 2020



DUNE DISTRIBUTION AERIAL PHOTOGRAPH 1 :
 OVERVIEW OF THE BOROUGH OF AVALON DUNE SYSTEM AS SHOWN ON 2020 AERIAL PHOTOGRAPH. OCEANFRONT DUNE SYSTEM IS COMPRISED OF 251 ACRES OF FOREDUNE, PRIMARY DUNE, SECONDARY DUNE AND INTERDUNAL WETLANDS; ARMACOST PARK DUNE IS COMPRISED OF 2.25 ACRES OF SECONDARY DUNE.

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/>, NEARMAPS AND THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE:
12-10-2020

DRAWN BY:
CPW

1 inch = 1,500 feet





DUNE DISTRIBUTION AERIAL PHOTOGRAPH 2 : NORTH OVERVIEW OF THE BOROUGH OF AVALON DUNE SYSTEM AS SHOWN ON 2020 AERIAL PHOTOGRAPH.

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/>, NEARMAPS AND THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE:
12-10-2020

DRAWN BY:
CPW

1 inch = 500 feet





Legend

Dune Vegetation

DUNE DISTRIBUTION AERIAL PHOTOGRAPH 3 : CENTRAL OVERVIEW OF THE BOROUGH OF AVALON DUNE SYSTEM AS SHOWN ON 2020 AERIAL PHOTOGRAPH.

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/>, NEARMAPS AND THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE:
12-10-2020

DRAWN BY:
CPW

1 inch = 500 feet





DUNE DISTRIBUTION AERIAL PHOTOGRAPH 4 : SOUTH OVERVIEW OF THE BOROUGH OF AVALON DUNE SYSTEM AS SHOWN ON 2020 AERIAL PHOTOGRAPH.

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/>, NEARMAPS AND THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE:
12-10-2020

DRAWN BY:
CPW

1 inch = 500 feet



APPENDIX B

Borough of Avalon Relevant Ordinances

Selected Sections:

(Chapter 9) – Parks, Beaches and Recreational Facilities

(Chapter 23) – Beach and Dune Protection

(Chapter 27) – Zoning Regulations

§ 9-1. PARKS AND RECREATION AREAS; CONDUCT AND USE.

§ 9-1.1. Definitions. [2000 Code § 9:2-9]

As used in this section:

PUBLIC RECREATION AREAS — shall mean and refers to all public recreation areas designated as parks within the Borough of Avalon and shall include playgrounds, recreation areas, athletic fields, tennis courts, skate parks, marina and docking facilities, the beach and boardwalk and all similar areas.

§ 9-1.2. Conduct in Parks, Beaches, Boardwalks and Recreational Areas; Prohibited Acts. [2000 Code 9:2-1; Ord. No. 624-2009; New]

While in a public recreation area or other public place or thoroughfare all persons shall conduct themselves in a proper and orderly manner. It shall be unlawful for any person to perform any of the following acts in any such place or area within the Borough of Avalon:

- a. Willfully mark, deface, disfigure, injure, tamper with or displace or remove any buildings, bridges, docks, slips, tables, benches, fireplaces, railings, pavings or paving materials, waterlines or other public utilities or parts or appurtenances thereof, signs, notices or placards, whether temporary or permanent, monuments, stakes, posts or other boundary markers or other structures or equipment, facilities or park property or appurtenances whatsoever, either real or personal.
- b. Fail to cooperate in maintaining rest rooms and washrooms in a neat and sanitary condition. No person above the age of five (5) years shall use the rest rooms and washrooms designated for the opposite sex.
- c. Dig or remove any soil, rock, sand, stones, trees, shrubs or plants or other wood or materials or make any excavation by tool, equipment, blasting or other means or agency.
- d. Construct or erect any building or structure of whatever kind, whether permanent or temporary, or run or string any public service utility into, upon or across such lands, except on special written permit issued hereunder. This provision shall not apply to municipal actions.
- e. Damage, cut, carve, transplant or remove any tree or plant or injure the bark or pick flowers or seed of any trees or plant, dig in

or otherwise disturb grass areas or in any other way injure the natural beauty or usefulness of any area.

- f. Climb any tree or walk, stand or sit upon monuments, vases, planters, fountains, railings, fences or upon any other property not designated or customarily used for such purposes.
- g. Tie or hitch any animal to any tree or plant.
- h. Throw, discharge or otherwise place or cause to be placed in the waters of any fountain, pond, lake, stream or other body of water in or adjacent to any such area or any tributary stream, storm sewer or drain flowing into such water any substance, matter or thing, liquid or solid, which will or may result in the pollution of said waters.
- i. Have brought in or dump, deposit or leave any bottles, broken glass, ashes, papers, boxes, cans, dirt, rubbish, waste, garbage or refuse or other trash. No such refuse or trash shall be placed in any waters in or contiguous to any such area or left anywhere on the grounds thereon, but shall be placed in the proper receptacles where such are provided. Where receptacles are not provided, all such rubbish or waste shall be carried away from the area by the person responsible for its presence and properly disposed of elsewhere.
- j. Drive any vehicle on any area except the paved park roads or parking areas or such areas as may on occasion be specifically designated as temporary areas, including motorized vehicles such as minibikes and mopeds.
- k. Park a vehicle in other than an established or designated parking area and in accordance with posted directions and the instruction of any attendant who may be present.
- l. Leave a vehicle standing or parked at night between the hours of midnight and 3:00 a.m. in established parking areas or elsewhere in the park area.
- m. Leave a bicycle in a place other than a bicycle rack when such is provided and there is space available.
- n. Ride a bicycle without reasonable regard to the safety of others.
- o. Leave a bicycle lying on the ground or paving or set against a tree or in any place or position where other persons may trip or be injured by it.

- p. Swim, bathe or wade in any waters or waterways in or adjacent to any park, except in designated areas.
- q. Bring into or operate any boat, raft or other watercraft, whether motor-powered or not, upon waters, except at places designated for boating. Such activity shall be in accordance with applicable regulations as are now or hereafter may be adopted.
- r. No person shall carry or possess firearms of any description, or air rifles, spring guns, bow and arrows, slings or any other forms of weapons potentially harmful to wildlife and dangerous to human safety or any instrument that can be loaded with and fire blank cartridges or any kind of trapping device. Shooting into park areas from beyond park boundaries is forbidden.
- s. Picnic or lunch on Borough property other than in public parks, the boardwalk or beaches.
- t. Use any portion of a picnic area or any of the buildings or structures therein for the purpose of holding picnics to the exclusion of other persons, or use such areas and facilities for an unreasonable time if the facilities are crowded.
- u. Leave a picnic area before all trash is placed in the disposal receptacles where provided. If such trash receptacles are not available, then trash shall be carried away by the picnicker, to be properly disposed of elsewhere.
- v. Take part in or abet the playing of any games involving thrown or otherwise propelled objects such as frisbees, balls, stones, arrows, javelins, horseshoes, quoits or model airplanes, except in those areas set apart for such forms of recreation.
- w. Allow a dog in his/her charge to go upon any part of the park property or recreational area unless held by a leash not longer than six feet.
- x. Build beach fires or operate charcoal or any other type of burner or cooking device upon and within a public recreation area.
[Amended 3-25-2020 by Ord. No. 800-2020]
 - 1. This section shall not apply to the pruning, clearing, trimming or alteration of vegetation, including replacement of vegetation with native species, completed pursuant to an approved dune vegetation management plan.
 - 2. This section shall also not apply to any beach fire which is conducted by the Borough as part of an official Borough

event, provided that such event has received the prior approval of the Borough Safety Officer and the Chief of the Avalon Volunteer Fire Department, Avalon Bureau of Fire Prevention, and is conducted at a location which is not subject to any restriction, and provided further that such beach fire does not violate any federal or state law, rule or regulation, or any approved beach management plan, or other similar contractual agreement between the Borough and any federal or state agency having jurisdiction. Any such beach fire in conjunction with such an event shall also comply in all respects with the New Jersey State Fire Code and the rules and regulations promulgated at N.J.A.C. 5:70-3 et seq. and any conditions imposed by the Avalon Bureau of Fire Prevention, the Borough Safety Officer, and the Borough Fire Official.

3. Open burning of any kind shall continue to be strictly prohibited on public property, including beach paths, the boardwalk, streets, sidewalks, parking areas, Borough marinas and public recreational areas.
4. Rules and regulations by Borough Council. Borough Council may, by resolution, make and establish rules and regulations which interpret or amplify any provision of this section or any of the subsections thereof, for the purpose of administering the same or making the enforcement thereof more effective.

§ 9-1.3. Hours of Operation. [2000 Code § 9:2-2]

Except for unusual and unforeseen emergencies, public recreation areas shall be open to the public every day of the year during the designated hours. The opening and closing hours for each individual facility shall be posted therein for public information. Any section or part of any facility may be declared closed to the public at any time and for any interval of time, either temporarily or at regular and stated intervals (daily or otherwise) and either entirely or merely for certain uses.

Chapter 23

BEACH AND DUNE PROTECTION

Editor's Note: Prior source history includes the 2000 Code § 9:10-1 et seq.

§ 23-1. FINDINGS.

§ 23-1.1. Statement of Purpose; State Aid Agreement.

- a. The Borough of Avalon is situated on a barrier island known as Seven Mile Beach, one (1) of eight (8) barrier islands along the coast of New Jersey. Certain portions of the beach and dunes bordering on the Atlantic Ocean consisting of the entire length of the inlet and oceanfront shorelines from the Townsends Inlet Bridge to 80th Street, inclusive, and the same being the boundary lines of the Borough of Avalon, New Jersey, have in the past suffered, and will continue to suffer, severely from damage caused by storms and wind-driven storm tides, at which times the ocean encroaches upon the land and causes serious damage to public and private property and endangers the safety and welfare of the public. The Borough Council acknowledges that this encroachment of the ocean and the causing of overwash areas on the island is a normal and natural occurrence on a barrier island and, in fact, is the very mechanism by which a barrier island withstands the impact of a major coastal storm.
- b. The situation created along the beach and dunes by reason of such storm tides and resulting damage has been so serious that many millions of dollars of both public and private funds have been expended for the replenishment of sand and vegetation, and erection of bulkheads, sand fences and other supportive structures intended to prevent encroachment by the ocean and beach and dune erosion.
- c. Continuing beach erosion along the Atlantic seaboard, along with the gradual rise of the ocean level, has created an immediate and imminent danger to persons and property in the Borough of Avalon by reason of the destruction of the sand barriers which protect the Borough's oceanfront. Consequently, it has become necessary to the health and welfare of the public to maintain the integrity of the system of dune and supportive structures on both public and private property within the Borough of Avalon.
- d. The interference with or the depletion of the beach and dunes tends to more easily permit encroachment by the ocean and, in the opinion of the Council of the Borough of Avalon, the conditions recited above make it imperative that it regulate and control the disturbance, removal or redistribution of sand and/or vegetation on or from the beach and dunes.

- e. On July 13, 1994, the Borough of Avalon entered into a State Aid Agreement (the "State Aid Agreement") with the New Jersey Department of Environmental Protection (the "NJDEP") as a condition to the receipt by the Borough of Avalon of funds from the State of New Jersey for the purpose of beach and dunes restoration. The Borough of Avalon agreed therein, inter alia, to maintain in effect this Beach Protection Ordinance (the "Ordinance"), subject to prior approval of any amendment thereto by NJDEP, and to comply with certain procedural and substantive requirements set forth within the State Aid Agreement in the review of applications for development within the Beach Dune Area under the Ordinance. Those procedural and substantive requirements for the review and approval of such applications for development contained within the State Aid Agreement are incorporated herein. (The State Aid Agreement may be found in the Borough offices.) **[Ord. No. 577-2006 § 9:10-1]**

§ 23-2. DEFINITIONS.

§ 23-2.1. Word Usage. [Ord. No. 577-2006 § 9:10-2]

As used in this chapter:

BEACH OR BEACHES — shall mean as defined within N.J.A.C. 7:7E-3.22(a), as may be amended from time to time.

BEACH DUNE AREA — shall mean those areas of the Borough of Avalon consisting of beaches and/or dunes, as defined herein.

DUNE OR DUNES — shall mean as defined in N.J.A.C. 7:7E-3.16(a), as may be amended from time to time.

EROSION HAZARD AREA — shall mean that area located oceanward of a line established by the Borough of Avalon in accordance with paragraph (2) of the State Aid Agreement.

LINE OF DISTURBANCE — shall mean a line to be established by any person proposing to disturb, remove or redistribute any sand and/or vegetation within the Beach Dune Area in connection with any proposed improvement as described in subsection 23-3.2 hereof which shall demarcate both the area of the proposed improvement and the greater area of construction activity related to such proposed improvement and which shall be staked in the field, shown on a plan to be submitted pursuant to Section 23-4, paragraph e. hereof and the area of which shall be limited to a maximum distance of six (6) feet beyond the outward face of each horizontal dimension of the proposed improvement.

OVERWASH AREAS — shall mean as defined in N.J.A.C. 7:7E-3.17(a), as may be amended from time to time.

§ 23-3. USE RESTRICTIONS.

§ 23-3.1. Prohibited Acts. [Ord. No. 577-2006 § 9:10-3.1]

Except as provided herein, it shall be unlawful for any person or persons, including any natural person, corporation, partnership, association or any of their agents or employees to disturb, remove, or redistribute any sand and/or vegetation on or from privately owned property located within the Beach Dune Area.

§ 23-3.2. Certain Exceptions on Private Property. [Ord. No. 577-2006 § 9.10-3.2]

Notwithstanding the provisions of subsection 23-3.1 above, sand and/or vegetation may be disturbed, removed or relocated on or from privately owned property located within the Beach Dune Area under the following circumstances:

- a. If, within the judgment of the Zoning Official, after consulting with the Code Enforcement Official, such disturbance, removal or redistribution is necessary in order to repair or to renovate an existing improvement, such repair or renovation shall not result in any horizontal or vertical expansion of such improvement, and any sand and/or vegetation disturbed, removed, replaced or redistributed as a result of such activity shall be within the Line of Disturbance and shall be restored when such repair or renovation is completed.
- b. If, within the judgment of the Zoning Official, after consulting with the Code Enforcement Official, such disturbance, removal or redistribution is necessary in order to replace any improvement, or portion thereof, for any reason whatsoever, as long as the replacement does not represent a horizontal or vertical expansion of the area of the improvement to be replaced. In such event, the person seeking to make such improvement shall file an application pursuant to Section 23-4 below within one (1) year of the date of destruction or demolition of the improvement or portion thereof to be replaced, and the person seeking approval for such replacement improvement shall be required to demonstrate (i) that such replacement improvement will not result in a horizontal or vertical expansion of the area previously occupied by the replaced improvement, and (ii) any sand and/or vegetation disturbed, removed, replaced or redistributed as a result of such activity shall be within the Line of Disturbance, shall be the minimal amount necessary for the improvement, and shall be restored or replaced when such replacement is completed.
- c. If, within the judgment of the Zoning Official, after consulting with the Code Enforcement Official, such disturbance, removal or redistribution will result from any construction or reconstruction which is not governed by paragraph a. or b. above, the person seeking to make such improvement shall file an application pursuant to Section 23-4 below, and shall be required to demonstrate (i) that there is no practicable or feasible alternative to construction or reconstruction in any area other than the Beach Dune Area; (ii) that such construction or reconstruction

will not cause significant, adverse, long-term impacts on the natural functioning of the Beach and Dunes system, either individually or in combination with other existing or proposed structures, land disturbances or activities; and (iii) any sand and/or vegetation disturbed, removed, replaced or redistributed as a result of such activity shall be within the Line of Disturbance, shall be the minimal amount necessary for the improvement, and shall be restored or replaced to the greatest extent possible when such construction or reconstruction is completed.

§ 23-3.3. Approvals Conditioned Upon Certain Requirements. [Ord. No. 577-2006 § 9:10-3.3; Ord. No. 620-2009 § 1]

In accordance with the State Aid Agreement, no approval shall be granted pursuant to subsection 23-3.2 to permit construction of swimming pools, tennis courts or similar structures as referenced in paragraph 1(b) of the State Aid Agreement unless the following conditions are satisfied:

- a. The property owner has obtained a CAFRA permit or equivalent from the New Jersey Department of Environmental Protection approving construction of swimming pools, tennis courts or similar structures as proposed to the Borough; and
- b. The New Jersey Department of Environmental Protection has either amended the State Aid Agreement to eliminate the prohibition against swimming pools, tennis courts or similar structures as referenced in paragraph (b) of the State Aid Agreement or the New Jersey Department of Environmental Protection has issued a letter to the Borough of Avalon waiving its right to enforce the default provisions of the State Aid Agreement if the Borough approves the construction of a swimming pool, tennis court or similar structure, as applicable to the particular application or the New Jersey Department of Environmental Protection otherwise authorizes the Borough to approve a swimming pool, tennis court or similar structure without penalty against the Borough; and
- c. The applicant submits an application for approval in accordance with the provisions of Section 23-4, obtains approval from Borough Council as provided herein, and complies with all other applicable provisions of this chapter.

§ 23-4. APPLICATION. [Ord. No. 577-2006 § 9:10-4; Ord. No. 620-2009 § 2]

Any person who requires approval for any of those activities described in subsection 23-3.2, paragraphs b. or c., or subsection 23-3.3, shall file with the Secretary of the Planning/Zoning Board an original and sixteen (16) typewritten copies of an application on forms supplied by the Secretary of the Planning/Zoning Board along with seventeen (17) copies of all plans and other documents. The application shall contain the following information:

- a. Applicant's name and address.
- b. Lot and block number of the property on which the improvement is proposed.
- c. A concise statement of the construction activity for which approval is sought.
- d. The reasons for such construction.
- e. A plan containing all of the design elements which would be required for site plan review if such construction activity were subject to site plan approval pursuant to Chapter 26, Subdivision and Site Plan Review.
- f. A plan showing the location, description and amount of sand and/or vegetation to be disturbed, removed or redistributed.
- g. A plan showing the location, description and amount of sand and/or vegetation to be replaced and the type and location of any temporary or permanent fencing to be provided.
- h. A plan demonstrating compliance with the Borough Stormwater Management Ordinance, the Borough's Beach Management Plan for the protection of Federal and State listed species, April 2009, as amended, and which identifies any path or other means of access to the beach in conformance with State and Federal laws.
- i. A plan showing the existing topographical cross-section of the property and the beach and dunes both on the property and oceanward extended from the northward and southward boundaries of the property to the mean low water line and a topographical cross-section of such areas after construction of the proposed improvement. Such plan shall be evaluated for compliance with the requirements of Section 23-3 with reference to the U.S. Army Corps of Engineers-Beach Program, or other acceptable methodologies to determine Beach Dune Area stability both before and after completion of the improvements.

§ 23-5. REFERRAL TO ENVIRONMENTAL COMMISSION. [Ord. No. 577-2006 § 9:10-5]

Upon receipt of an application deemed complete by the Secretary of the Planning/Zoning Board in accordance with Section 23-4 above, the Planning/Zoning Board shall forward a copy of the application to the Environmental Commission of the Borough of Avalon. The Environmental Commission shall have forty-five (45) days within which to consider the application and make any recommendations concerning same to the Planning/Zoning Board. Any such recommendations by the Environmental Commission shall be in writing. If the Environmental Commission should fail to act within forty-five (45) days of the date of such referral by the Planning/Zoning Board, the Planning/Zoning Board shall proceed to act on the application as herein specified. The Planning/Zoning Board shall give

due regard to, but shall not be required to accept, any recommendation of the Environmental Commission.

§ 23-6. REFERRAL TO NJDEP. [Ord. No. 577-2006 § 9:10-6]

In accordance with paragraph 1(a) of the State Aid Agreement, upon receipt of an application deemed complete by the Secretary of the Planning/Zoning Board in accordance with Section 23-4 above, the Planning/Zoning Board shall forward a copy of the application to the NJDEP, Bureau of Coastal Regulation, which will have forty-five (45) days within which to consider the application and provide its written comments to the Planning/Zoning Board with regard to the application's compliance with the Rules on Coastal Zoning Management (N.J.A.C. 7:7E-1 et seq.). The Planning/Zoning Board shall give due regard to, but shall not be required to accept, any recommendation of NJDEP.

§ 23-7. CONDUCT OF PUBLIC HEARING. [Ord. No. 577-2006 § 9:10-7; Ord. No. 606-2009; Ord. No. 620-2009 § 3]

The Planning/Zoning Board shall commence a hearing on an application for approval pursuant to subsection 23-3.2, paragraph b. or c., or subsection 23-3.3, within forty-five (45) days after the earlier to occur of the expiration of the time within which the Environmental Commission shall act with reference to the application pursuant to Section 23-5 or the issuance of a report or recommendation by the Environmental Commission. The applicant shall provide proof of notice of such hearing to the Planning/Zoning Board Secretary at least three (3) days before the scheduled date of such hearing. Such notice shall be in the same manner as provided for land use applications under Chapters 26 and 27 and shall conform to the requirements of N.J.S.A. 40:55D-12.

At that time, the Planning/Zoning Board shall hear and consider testimony from the applicant's representatives and from any interested party. The applicant shall have the burden of producing competent evidence to demonstrate its right to relief pursuant to subsection 23-3.2, paragraphs b. or c., or subsection 23-3.3, with or without reasonable conditions which may be imposed by the Avalon Borough Council in order to accomplish the purposes of this chapter. In reviewing the application, the Planning/Zoning Board shall consider, at a minimum, the following factors:

- a. The size of the property.
- b. The size and type of the improvement sought.
- c. The location of the proposed improvement on the property.
- d. The elevation of the lot and the improvement.
- e. The size, elevation, and configuration of the sand and/or vegetation located on the property.

- f. The shore protection afforded by the dunes in the unaltered state compared to the shore protection afforded by the proposed improvement.
- g. The location, amount and type of sand and/or vegetation to be altered.
- h. The location, amount and type of any new sand and/or vegetation resulting from the proposed improvement.
- i. The danger to life and property from flooding or erosion damage likely to occur as a result of the proposed improvement.
- j. The susceptibility of the property and proposed improvement to flood damage.
- k. The relationship of the proposed improvement to the comprehensive plan and flood plain management program for that area.
- l. The expected height, velocity, duration and rate of rise and sediment transport of the flood waters and the effect of wave action expected at the property.

After reviewing the application and considering the evidence presented at the hearing as well as the factors identified above, the Planning/Zoning Board shall make findings of fact and submit those findings, together with all materials received during the application process and its recommendation concerning the merits of the application, to the Avalon Borough Council for a final determination. The Borough Council shall, within forty-five (45) days after receipt of the findings of fact and recommendations of the Planning/Zoning Board, make a final decision on the application at a public hearing scheduled by the Borough Council on twenty (20) days notice to the applicant. The applicant shall provide notice of the hearing as would be required under N.J.S.A. 40:55D-12 for land use applications. The applicant shall provide proof of notice of such hearing to the Borough Clerk at least three (3) days before the scheduled date of such hearing. Such notice shall be in the same manner as provided for land use applications under Chapters 26 and 27 and shall conform to the requirements of N.J.S.A. 40:55D-12. At such hearing, the applicant shall not be permitted to present additional information, materials, or evidence, but shall be permitted to comment on the findings and recommendations of the Planning/Zoning Board and to argue the merits of its application to the Borough Council. At the conclusion of the hearing, or within thirty (30) days thereafter if the Borough Council requires additional time to consider the application, the Borough Council shall issue its decision by a vote of a majority of members in attendance at the meeting.

§ 23-8. RIGHT TO APPEAL. [Ord. No. 577-2006 § 9:10-8; Ord. No. 606-2009]

The applicant shall have the right to appeal any decision of the Avalon Borough Council to the Superior Court of New Jersey.

§ 23-9. COMPLIANCE WITH OTHER BOROUGH ORDINANCES. [Ord. No. 577-2006 § 9:10-9]

All proposed development as provided under subsection 23-3.2 shall be further subject to the applicant's compliance with all other applicable ordinances of the Borough of Avalon.

§ 23-10. APPLICATION FEES AND PROFESSIONAL FEES. [Ord. No. 577-2006 § 9:10-10; Ord. No. 620-2009 § 4]

Each applicant for approval pursuant to subsection 23-3.2, paragraph b. or c., or subsection 23-3.3 shall submit with its application an application fee in the amount of one thousand dollars (\$1,000.00). In addition, each applicant seeking approval pursuant to subsection 23-3.2, paragraph b. or c., or subsection 23-3.3 shall also place in escrow with the Secretary of the Planning/Zoning Board a payment in the amount of two thousand five hundred (\$2,500.00) dollars to be applied toward payment of the professional fees of the Planning/Zoning Board in the review and consideration of that application. The same conditions as applicable to the disposition of escrow payment for professional fees for applications for land use approval under Chapters 26 and 27 of the Avalon Borough Code shall apply to the escrow payment required herein. Such application fees and professional fees shall be applicable to consideration of the application by both the Planning/Zoning Board and Environmental Commission. In the event the applicant is seeking approval pursuant to subsection 23-3.2, paragraph b. or c. and subsection 23-3.3 in the same application the applicant shall only pay one application fee and one escrow payment.

§ 23-11. SUPPLEMENTATION OF DUNES. [Ord. No. 577-2006 § 9:10-11]

Vegetation and sand fences may be utilized to supplement dunes in connection with any application. Any such vegetation shall be compatible with surrounding, existing vegetation and take into account the location, height and gradient of dunes supported by such vegetation and conform to the requirements for landscape improvements under subsection 27-7.3t in Chapter 27, Zoning, as well as the Standards for Beach and Dune Activity set forth at N.J.A.C. 7:7E-3A.1 et seq., each as may be amended from time to time.

§ 23-12. SAND AND/OR VEGETATION RESTORATION. [Ord. No. 577-2006 § 9:10-12]

If sand and/or vegetation shall be disturbed, removed or redistributed on or from any property within the Beach Dune Area at any time and due to any cause, including, but not limited to, as a result of storm activity, upon direction of the Construction Official, the owner of that property shall restore and/or replace such sand and/or vegetation except that there shall be no such obligation to restore or replace a small amount of loose, windblown sand relocated on or from a property as a result of storm activity.

§ 23-13. INTERFERENCE WITH DUNE AND OTHER PROTECTED AREAS; TRESPASSING ON DUNES; REMOVAL OF VEGETATION OR FENCE PROHIBITED. [Ord. No. 577-2006 § 9:10-13]

- a. It shall be unlawful for any person or persons, including any natural person, corporation, partnership, association or anyone acting in their behalf or at their instance to remove any snow fence or vegetation which exists in the Beach Dune Area.
- b. It shall be unlawful to trespass upon any dunes, except as paths are designated and marked for public use.

§ 23-14. NECESSITY OF MAINTENANCE. [Ord. No. 577-2006 § 9:10-14]

Maintenance of the Beach Dune Area and any other natural protective barriers now existing or heretofore created are necessary and proper for the good government, order and protection of persons and property and for the preservation of the public health, safety and welfare of this Borough and its inhabitants; and it is an appropriate and necessary exercise of the Borough's police powers that the Beach Dune Area and other protective barriers be maintained in accordance with this chapter in order to provide protection deemed essential in the public interest.

§ 23-15. BULKHEADS DISALLOWED. [Ord. No. 577-2006 § 9:10-15]

Bulkheads will not be allowed to supplement dunes, with those exceptions to this use restriction approved by NJDEP, Land Use Regulation Program, Coastal Area Review Section.

§ 23-16. VIOLATIONS, REMEDIES AND PENALTIES. [Ord. No. 577-2006 § 9:10-16; New]

Upon violation of the provisions of this chapter, the Borough may, in addition to any other legal remedies available to it:

- a. Commence an action before a court of law or administrative agency having jurisdiction to prevent such unlawful erection, construction, reconstruction, alteration, repair, conversion, maintenance or use; to restrain, correct or abate such violation; to prevent the occupancy of the structure, improvement or property; or to prevent any illegal act, conduct, use or activity on or about the property.
- b. Revoke any permit or approval issued or granted pursuant to this chapter without regard to whether work has begun or a use has commenced pursuant to such permit or approval.
- c. In addition to the rights of civil and administrative enforcement provided herein, any person who violates any provision of this chapter shall, upon conviction, be liable to the penalty stated in Chapter 1, Section 1-5.

§ 23-17. ENVIRONMENTAL COMMISSION PARTICIPATION IN RELATED PERMIT REVIEW. [Ord. No. 577-2006 § 9:10-17]

The Environmental Commission is hereby directed to participate to the fullest extent possible in review by the NJDEP of applications for development within the Beach Dune Area in accordance with N.J.A.C. 7:7-4.1 et seq., as may be amended from time to time. To that end, the Borough Clerk shall promptly forward to the Environmental Commission copies of all such applications received by the Borough in accordance with applicable law. Thereafter, within fifteen (15) days of receipt of such application, the Environmental Commission shall provide NJDEP with any comments it deems appropriate with regard to such application and shall also notify NJDEP of its intent to participate as an interested party with regard to such application, requesting specifically that it be notified of any public hearing, modification of an application notice of decision, or notice of appeal with reference to such application. The Environmental Commission shall participate in any public hearing conducted by NJDEP in connection with such applications and shall provide testimony and/or written comment as it deems appropriate. Such written comment shall be provided to NJDEP within fifteen (15) days after completion of any public hearing. Within thirty (30) days of the grant of each permit application, the Environmental Commission may determine to appeal the grant of such permit to the Commission of NJDEP. If the Environmental Commission shall receive notice that any such permit application has been denied and a request has been made to NJDEP for an adjudicatory hearing to contest such denial within ten (10) days of its receipt of such notice, the Environmental Commission may file with NJDEP its written response to such a request and its intent to participate in the appeal process.

The provisions of this section are intended to authorize the Environmental Commission to undertake all those measures available to it under the law to assure that those regulations of NJDEP governing development within the Beach Dune Area are strictly enforced by NJDEP and in a manner consistent with the provisions of this chapter.

§ 27-1. TITLE. [Ord. No. 607-2009 § 27-1]

This chapter shall be known and may be cited as the Zoning Regulations of the Borough of Avalon, Cape May County, New Jersey, 2002.

§ 27-2. AUTHORITY AND PURPOSE. [Ord. No. 607-2009 § 27-2]

Pursuant to N.J.S.A. 40:55D-1 et seq. this Zoning Ordinance is enacted for the following specific purposes:

To guide and regulate the orderly growth and development of the Borough of Avalon in accordance with a duly enacted comprehensive Master Plan;

To protect the established character and social and economic well being of the community, to secure safety from fire, and other dangers;

To maintain community character and visual environment;

To lessen congestion;

To facilitate adequate provision for transportation, schools, parks and other facilities and services;

To invigorate the business environment;

To promote the establishment of appropriate population densities and concentrations that will contribute to the well being of persons, neighborhoods, and the community;

To promote the conservation of open space and valuable natural resources;

To preserve and enhance important characteristics of the natural environment; and

To these ends, to regulate heights, design, appearance, number of stories and size of buildings and other structures as well as their placement on the land.

t. Landscaping.

1. General Introduction.

- (a) The survival of most types of plant life is difficult on a barrier island such as Avalon. Vegetation has to contend with nutrient poor, sandy soils, frequent northeast storms, strong west winds, and salt-laden air. These conditions make it difficult for most vegetation to develop and mature. Vegetation of all types, especially trees and shrubs, enhance absorption of run-off back into the soil, reduce air pollution, and aid transpiration. Trees and shrubs reduce the perception of noise 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 the island.
- (b) The goal of the Borough is that all existing trees and vegetation should be preserved where and whenever feasible. Plans for construction and/or demolition must specify appropriate grading and protection details to assure the preservation of the vegetation. The plans must clearly indicate all vegetation to be preserved or removed.
- (c) Routine Maintenance. Routine maintenance, including pruning and planting of materials is permitted, provided

it is on private property. Pruning, clearing or alteration of vegetation is prohibited on public property, or any dune, except when performed in conjunction with an approved Dune Vegetation Management Plan or otherwise with the written consent and approval of the Borough as herein provided and any such activity shall be performed only under the Borough's supervision and direction.

Cross reference: See Applicability of Storm Water Management Plan - subsection 27-7.3u.

2. Landscape Plan.

A landscape plan shall be required:

- (a) For all applications pursuant to Chapter 26 (Site Plan Review) or Chapter 27 (Zoning) of this Code.
- (b) For all other residential development, including development for one and two family dwellings.
- (c) For additions to an existing structure and/or site improvements which increases the square footage of the principal structure or any accessory structure which either individually or in the aggregate measures two hundred fifty (250) square feet or more.
- (d) For the construction or installation of any in-ground or on-ground swimming pool; spa or pool spa as those terms are defined in Section 27-3c. Hot tubs or pool hot tubs as defined in the same section are excluded from the landscape plan requirements.

3. Definitions.

In addition to those definitions set forth in Section 27-3c, the following definitions shall apply to this subsection:

DECIDUOUS — Plants that drop their foliage annually before becoming dormant.

EXISTING STRUCTURE — When used in the context of demolition shall mean the principal structure and accessory structures, if any, that are intended to be demolished.

EVERGREEN — A non-deciduous plant with foliage that remains green all year round.

GREEN SPACE — "Green space" shall include not less than one (1) tree plus grass or lawn, shrubs, vegetative ground

cover, or any combination thereof provided, however, that any and all plantings should come from the Avalon Acceptable Plant Materials List. Green space shall be calculated using only the buildable area of a lot. Decorative stone, pervious stone and pervious pavement and mulch beds are not considered green space. Plants that are considered annuals or perennials may be planted at the discretion of the owner provided, however, that nothing may be planted that appears on the List of Invasive and Prohibited Plant Species.

LANDSCAPE PLANTINGS — Lawn, trees, shrubs, groundcover, perennials, annuals and ornamental grasses.

PRINCIPAL STRUCTURE — The building existing or proposed as the principal residence to be built on a parcel of land.

PRUNING OF TREES AND VEGETATION — To cut off or cut back parts of a tree for better shape, or more fruitful growth.

SHADE TREE — A tree, usually deciduous, planted primarily for overhead canopy.

SHRUB — A woody plant that is never tree-like in habit and produces branches or shoots from near the base.

SPRAYER — A manually operated nozzle that fits on the end of a garden hose which discharges water.

STREET TREES — Trees planted in the street right-of-way, between the sidewalk and curb line or between the right-of-way line and the street line.

TREE — Any existing deciduous or evergreen tree having a trunk diameter greater than three (3) inches or more measured three (3) feet above the ground.

TREE TOPPING — The removal of most of the upper branches and trunk of a tree to effectuate restricted growth or the termination of the plant (also known as pollarding or hat-racking).

VACANT LOT — A parcel of land with no structural improvements.

7. Prohibited Actions.

- (a) The removal, pruning or topping of any tree, shrub or plant from public property is prohibited unless done in conjunction with the application and participation in an approved project under the Dune Vegetation Management Plan, or otherwise with the Borough's consent. The Borough's consent shall be obtained by written application to the Business Administrator who shall consult with Department / Division Heads, Borough professionals and others to determine if approval will be granted or denied. Any approval shall be subject to such terms, conditions and provisions specified by the Business Administrator.
- (b) The topping of any tree is prohibited, except to the extent necessary to comply with the maximum height limitations imposed under the Living Fence paragraph above.
- (c) The destruction or marring of a tree, shrub or plant to circumvent the provisions of this chapter is prohibited.
- (d) The planting of any plant or vegetation on the invasive plant species list is prohibited.

8. Clearing of Lots.

It shall be unlawful to clear or clean cut any lot or parcel of ground in the Borough except in the following circumstances:

- (a) The proposed clearing of such lot or parcel is accompanied by an application for development which is accompanied by a landscape plan which conforms to the requirements of this Chapter and section; and
- (b) Such landscape plan shall include the fifteen (15%) percent minimum green space required by this paragraph t. and which shall also identify the location of any mature tree or trees that are to remain. If the owner or developer determines that it is neither possible nor feasible to retain any such mature tree, the reasons for such determination shall be clearly set forth on the landscape plan or in an attachment thereto; and
- (c) The landscape plan shall be approved by the appropriate authority (Zoning Official or Planning/Zoning Board) before any lot clearing shall take place.
- (d) An application for a demolition permit shall be accompanied by a modified landscape plan which shall clearly indicate the vegetation to be removed and the reasons for such removal. In the case of any mature tree (one measuring three (3) inches in diameter measured three (3) feet above ground) proposed for removal, such plan shall indicate the reasons why it is not possible or feasible to retain such tree or trees. Any mature tree that is proposed for sale or relocation off site shall also be identified. The modified landscape plan shall be approved by the appropriate authority (Zoning Official or Planning/Zoning Board) before any clearing shall take place.

- (e) The proposed clearing is necessary in order to comply with the provisions of Chapter 16 (Property Maintenance) of the Avalon Borough Code in order:
- (1) To remove any tree, regardless of size or maturity, that is diseased or dying, or on the Borough's current list of invasive plant species, or which poses a threat or danger to person or property.
 - (2) To remove any vegetation which is listed on the Borough's current list of invasive species.
 - (3) To remove brush, weeds, dead and dying trees, stumps, roots, ragweed, poison ivy, poison sumac, obnoxious growths, filth, garbage, trash and debris, removal of which may be necessary and expedient for the protection of the public health, safety, general welfare or to eliminate a fire hazard or any other nuisance or to comply with the provisions of Chapter 16 (Property Maintenance) of the Borough Code.

§ 27-7.3

9. Irrigation.

Cross reference: Previously designated as 27-7.3(2).

- (a) Watering Restrictions. See restrictions in Borough Code Section 14-15.
- (b) Watering Systems. All newly installed or retrofitted watering systems shall meet the following minimum standards:
 - (1) Drip and/or soaker technology may be utilized provided the system has pressure compensating emitters as per published manufacturer's specifications.
 - (2) Rotators and spray irrigation heads may be utilized only if they have a maximum precipitation rate not to exceed 1.25 inches per hour (1.25 ins. /hr.) as per published manufacturer's specifications.
 - (3) Systems shall be designed and positioned as to prevent overspray onto sidewalks, streets, adjacent properties or any natural body of water and shall follow industry design standards.

(c) Control Systems:

- (1) All newly installed or retrofitted irrigation control systems shall utilize "smart" technology controllers approved by the National Irrigation Associations SWAT Certification (<http://www.irrigation.org/SWAT/>).
- (2) Each system shall utilize a rain sensor and/or at least one other weather or soil moisture sensor.
- (3) Effective use of these control systems is enhanced by following manufacturer design and installation specifications.

(d) Contractor Certification:

- (1) All contractors installing and/or maintaining irrigation systems shall hold a valid Landscape Irrigation Contractor's license issued by the NJ DEP in order to construct, repair, maintain, improve or alter a landscape irrigation system in accordance with P.L. 1991, c. 27 (C. 45:5AA-3).

(e) Exemptions from the above watering restrictions include:

- (1) Manual, self-contained watering devices such as watering cans, buckets or rain barrels and hand watering utilizing a hose with an auto-shut off nozzle.
- (2) Portable sprayers and sprinklers attached to a hose.
- (3) Newly installed lawn and landscape bed sprinklers for the first forty-five (45) days.
- (4) All newly installed or retrofitted systems utilizing both a smart controller and the above drip or spray technology as per paragraph (c) above.

10. Acceptable Plant Species; Invasive and Prohibited Plant Species.

The Borough Environmental Commission shall develop, maintain, and periodically update, as need and circumstances require, a comprehensive list of plant materials which shall include: (i) Shade Trees; (ii) Evergreen Trees; and (iii) Shrubs as well as (iv) a list of plantings acceptable for Living Fences; (v) a dune vegetative management list; and (vi) a list of Invasive and Prohibited Plant Species.

Such lists of acceptable as well as prohibited plant species, when prepared by the Environmental Commission, shall be submitted to the Planning/Zoning Board for its approval. Upon approval by the Planning/Zoning Board such list of acceptable as well as prohibited species shall become an appendix to Chapter 27 (Zoning) of the Code of the Borough of Avalon. Such lists shall bear the date of approval by the Planning/Zoning Board. **[Ord. No. 743-2016 § 1]**

§ 27-8.6. Violations, Remedies and Penalties. [Ord. No. 607-2009 § 27-8.6; Ord. No. 695-2014 § 7]

If any structure or other improvement is erected, constructed, reconstructed, altered, repaired, converted or maintained; or any structure, improvement or property is used, or any work performed

§ 27-8.6

§ 27-8.6

thereon, in violation of this Chapter 27, the Borough may, in addition to any other legal remedies available to it:

- a. Commence an action before a court of law or administrative agency having jurisdiction to prevent such unlawful erection, construction, reconstruction, alteration, repair, conversion, maintenance or use; to restrain, correct or abate such violation; to prevent the occupancy of the structure, improvement or property; or to prevent any illegal act, conduct, use or activity on or about the property.
- b. Revoke any permit or approval issued or granted pursuant to this Chapter 27 without regard to whether work has begun or a use has commenced pursuant to such permit or approval.
- c. In addition to the rights of civil and administrative enforcement provided herein, any person violating any of the provisions of this Chapter 27 shall, upon conviction, be subject to a fine and/or other penalty in accordance with the provisions of Chapter 1, Section 1-5.
- d. It shall be a violation of this chapter for any person acting as an owner, agent, real estate broker, real estate sales agent, property manager, reservation service or otherwise to arrange, negotiate, advertise or promote the use of property in violation of this chapter and the ordinances of the Borough of Avalon in any medium, including, but not limited to, print media, flyers, signs, billboards, radio, television, cable, internet, web pages, social media, e-mail or otherwise.

APPENDIX C

Communications with NJDEP

- **Request for Jurisdictional Determination to NJDEP on July 5, 2009 and August 3, 2009**
- **Approved Jurisdictional Determination from Andrew Gale of NJDEP on October 1, 2009**



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

Joseph L. Lomax, President
(609) 465-9857
jlomax@lomaxconsulting.com

August 3, 2009
UPS Delivery

New Jersey Department of Environmental Protection
Division of Land Use Regulation
501 E. State Street, P.O. Box 439
Trenton, NJ 08625-0439
ATTN: Application Support

RE: Coastal Jurisdictional Determination– Avalon Dune Vegetation Management
Borough of Avalon, Cape May County, New Jersey
TLCG File No: 08-563.1

Dear Application Support Agent

In accordance with N.J.A.C. 7:7-1.5 please find the following materials enclosed so that the Department may conduct a Coastal Jurisdictional Determination to determine the applicability of the Coastal Area Facility Review Act (CAFRA, N.J.A.S.A. 13:19-1 et seq.) for the above referenced Dune Vegetation Management Plan in the Borough of Avalon, Cape May County, New Jersey:

1. One (1) completed copy of the Coastal Jurisdictional Determination Checklist.
2. A complete written description of the project and all proposed activities (below).
3. A copy of correspondence from our office dated June 5, 2009 to Colleen Keller of NJDEP confirming a telephone conversation that took place June 3, 2009.
4. One (1) set of color photographs of the existing property is provided (Figures 1 – 8). The base aerial photograph is the 2007 NJDEP Ortho Photo.
5. One (1) copy of a USGS Quad Map outlining the site location (Figure 9).

DESCRIPTION OF THE PROJECT SITE
AND ALL PROPOSED ACTIVITIES

BACKGROUND INFORMATION The Borough of Avalon is a barrier island community located in Cape May County, NJ. As a result of the geographic location of the Borough, a high priority has been placed on the role of the dunes within the community for both protective and biotic purposes. Accordingly, the Borough of Avalon has undergone a vegetative natural resource inventory in the summer of 2008 to



ATTN: Application Support
August 3, 2009
Page 2

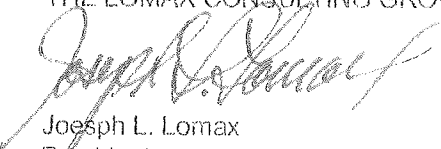
analyze the dune vegetation of the community. The results of this inventory revealed that an invasive species, the Japanese Black Pine (*Pinus thumbergii*), has replaced a substantial portion of the native species within the dune system. This species has spread throughout a significant area of the secondary dune and is spreading throughout the vegetative community at an alarming rate. It has established a mono-culture in some areas of the dune system. If left untreated it is anticipated that this non-native species will lead to a further decline of native vegetation stands within the community, which local wildlife relies on for survival.

PROJECT DESCRIPTION The Borough of Avalon has retained the Lomax Consulting Group in order to prepare a Dune Vegetation Management Plan, which focuses on maintaining and enhancing the extensive and environmentally sensitive dune system. The Management Plan will provide standards and techniques that improve the vegetative component of the dune ecosystem through the control of invasive plant species and methodically replacing invasive plants with native vegetation plantings. As such, the Lomax Consulting Group is requesting confirmation from the Department that the Borough does not need a permit for the maintenance of the dune system through the replacement of invasive species with native species.

The Lomax Consulting Group had a telephone consultation with the Department on June 5, 2009. Based on that telephone consultation (summary attached for your review), it is our understanding that: (1) the Department does not regulate, but encourages the planting and re-vegetation of the dune system with principally native species; (2) maintenance entailing trimming, thinning and replacement of non-native, invasive trees (e.g. Japanese Black Pine) within the dune system is not regulated under CAFRA; so long as the aerial portion of the trees are removed by hand and the root systems of the trees remain intact and in place. Further, it is our understanding that no mechanized equipment (trucks) may be used to remove the aerial portion of the trees and no excavation of dune sand in conjunction with the dune vegetation management is permissible without a permit, except as required to plant the native species.

We are respectfully requesting written confirmation that these findings are correct and accurate as described above. If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,
THE LOMAX CONSULTING GROUP, LLC


Joseph L. Lomax
President

cc: Mr. Andrew Bednarek, Borough of Avalon Business Administrator
Mr. Martin L. Pagliughi, Borough of Avalon Mayor
Dr. Brian Reynolds, Chair, Avalon Environmental Commission



State of New Jersey
Department of Environmental Protection



COASTAL JURISDICTIONAL DETERMINATION CHECKLIST

Revised: December 23, 2008

Website: www.nj.gov/dep/landuse

CALL NJDEP AT (609) 777-4154 IF YOU HAVE ANY QUESTIONS

****USE THIS FORM ONLY FOR CAFRA, WATERFRONT DEVELOPMENT, AND/OR COASTAL WETLANDS DETERMINATIONS****

To apply for a coastal area applicability determination, complete this checklist and send the material required below to the following address (please do not submit more copies than required):

Postal Mailing Address:
NJDEP Division of Land Use Regulation
P.O. Box 439
Trenton, NJ 08625

Street Address (For courier service and hand deliveries only):
NJDEP Division of Land Use Regulation
501 East State Street, Station Plaza Five, 2nd Floor
Trenton, NJ 08609

CHECK ALL BOXES BELOW OR MARK N/A

1. One completed copy of this checklist.

2. Complete the following information:

Applicant Name: BOROUGH OF AVALON
Address: 3100 DUNE DRIVE
City: AVALON State: NJ Zip: 08202

Agent: JOSEPH L. LOHAX - THE LOHAX CONSULTING GROUP
Address: PO BOX 9
City: CAPE MAY COURT HOUSE State: NJ Zip: 08210

Daytime Telephone Number: (609) 465-9857

PROJECT LOCATION:

Block(s): MULTIPLE Lot(s): MULTIPLE

Municipality: BOROUGH OF AVALON County: CAPE MAY COUNTY

Site Location (OR nearest crossroads): BOROUGH OF AVALON

3. Submit the following information:

- a. A complete written description of the project and all proposed activities.
- b. One copy of a location map (USGS quad map preferable) outlining the site location.
- c. One set of site plans for the proposed project.
- d. One copy of each previous approval received from NJDEP concerning the site, if such approvals exist.
- e. One set of color photographs of the existing property.

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

Program Interest #: _____ - _____ - _____ Class Code: _____ Activity #: _____



P. O. BOX 9 (MAILING)
1435 ROUTE 9 NORTH (DELIVERY)
CAPE MAY COURT HOUSE, NJ 08210, USA

Joseph L. Lomax, President
(609) 465-9857
jlomax@lomaxconsulting.com

609-465-9857 (F)
609-465-2449 (F)
WWW.LOMAXCONSULTING.COM

June 5, 2009
UPS Delivery

New Jersey Department of Environmental Protection
Division of Land Use Regulation
501 E. State Street, P.O. Box 439
Trenton, NJ 08625-0439
ATTN: Ms. Colleen Keller

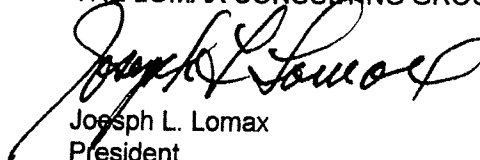
RE: CAFRA Jurisdiction – Avalon Dune Vegetation Management
Borough of Avalon, Cape May County, New Jersey
TLCG File No: 08-563.1

Dear Ms. Keller:

Thank you for taking time out of your schedule on Wednesday June 3, 2009 to discuss the Departments extent of jurisdiction over planting and vegetation maintenance in the dune system, in the Borough of Avalon. Based upon our telephone consultation, it is our understanding that: (1) the Department does not regulate, but encourages the planting and re-vegetation of the dune system with principally native species; (2) maintenance entailing trimming, thinning and replacement of non-native, invasive trees (e.g. Japanese Black Pine) within the dune system is not regulated under CAFRA; so long as the aerial portion of the trees are removed by hand and the root systems of the trees remain intact and in place. Further, it is our understanding that no mechanized equipment (trucks) may be used to remove the aerial portion of the trees and no excavation of dune sand in conjunction with the dune vegetation management is permissible without a permit, except as required to plant the native species.

As discussed, we will continue to keep you updated on the progress of our Dune Vegetation Management Plan. When you are in the Borough or vicinity, please feel free to contact us and we would like to take the opportunity to discuss the project and show you examples of key areas of the Dune Vegetation Management Plan. If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,
THE LOMAX CONSULTING GROUP, LLC

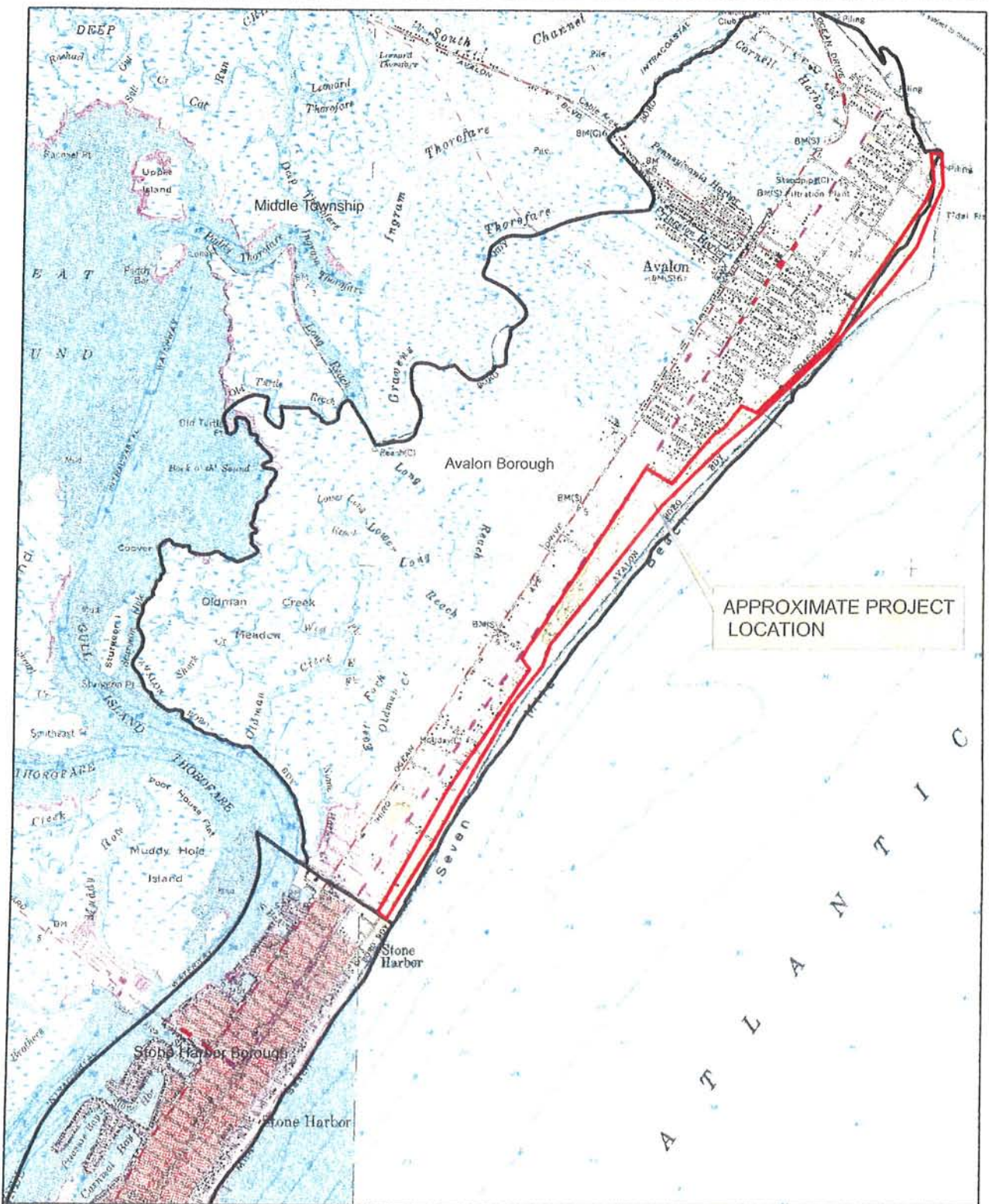


Joseph L. Lomax
President

CC: Mr. Andrew Bednarek, Borough of Avalon Business Administrator
Mr. Martin L. Pagliughi, Borough of Avalon Mayor
Dr. Brian Reynolds, Chair, Avalon Environmental Commission

08-563.1\Draft CAFRA Jurisdiction Ltr.ait

Over 30 years of environmental excellence.



APPROXIMATE PROJECT LOCATION

FIGURE 9: Site location on USGS Quad Maps No. 175 Stone Harbor & 176 Avalon

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> & THE CAPE MAY COUNTY PLANNING DEPARTMENT



DATE:
7-9-09

DRAWN BY:
TWR

1 inch = 3,000 feet





State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Land Use Regulation
P.O. Box 439, Trenton, NJ 08625-0439
Fax # (609) 292-8115
www.state.nj.us/dep/landuse

JON S. CORZINE
Governor

MARK N. MAURIELLO
Acting Commissioner

OCT 01 2009

Joseph L. Lomax
The Lomax Consulting Group
PO Box 9
Cape May Courthouse, New Jersey 08210

Re: DLUR File No.: 0501-05-0012.1 APD 090001

Name: Borough of Avalon
Block: Multiple Lot(s): Multiple
Address: Borough of Avalon
Borough of Avalon, Cape May County

Dear Mr. Lomax:

This letter is in response to your request for a jurisdictional determination as referenced above. Based on a review of the information submitted including, and a review of information as maintained on the Department's Geographic Information System the following statutes will apply:

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

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

(X) There are no Coastal Wetlands on this site, therefore no permit is required.

Based on a review of the submitted documentation, the Coastal Area Facility Review Act, **CAFRA**, is **not applicable** as per the Coastal Permit Program Rules for the control of invasive plant species and the replacement of native vegetation within the dune system. All proposed activities should comply with Subchapter 3A of the Coastal Zone Management Rules. No machinery is permitted for the use of removing the invasive plant species, all removal should be conducted by hand. Please note excavation of the dunes is prohibited.

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. Assistance with the applicability of these statutes is available from this offices' Cape May County Region group which may be contacted at the above address.

This letter does constitute a jurisdictional determination for the 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.).

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.

Should you have any questions regarding this determination, please contact Georgeann Sobotka at: Georgeann.Sobotka@dep.state.nj.us. Requests for assistance must include the file number as found on each page of this determination.

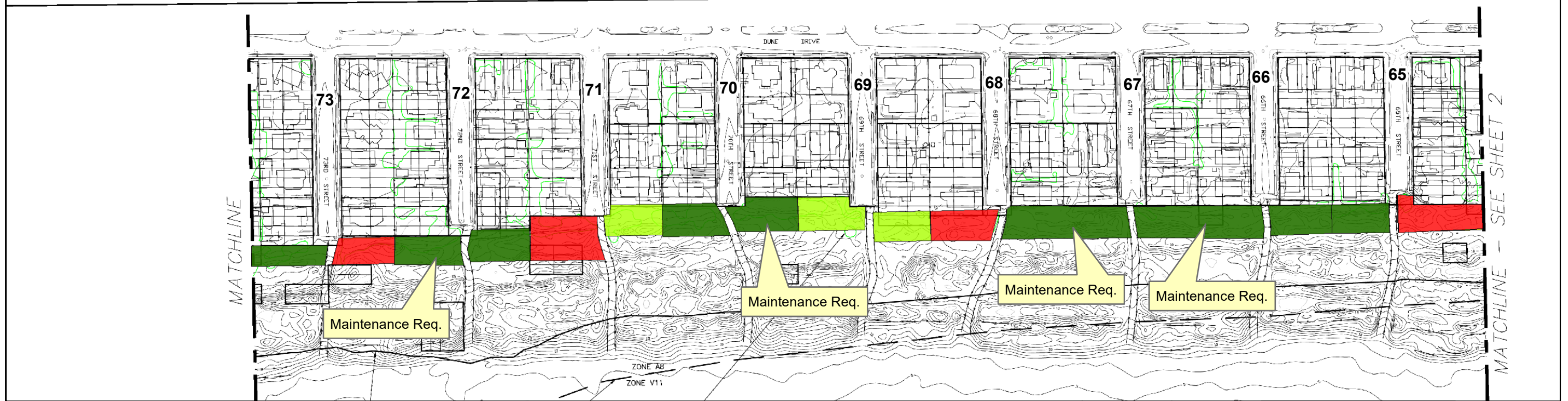
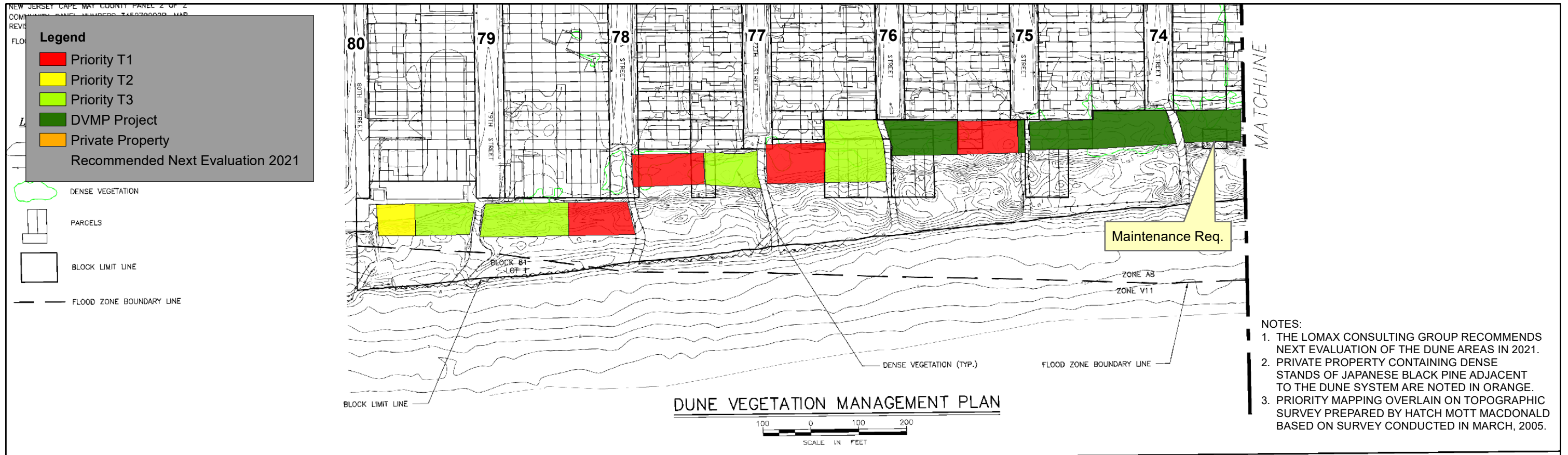
Sincerely,



Andrew Gale, Supervisor
General Permit & Jurisdictional Determination Units
Division of Land Use Regulation

c: Bureau of Coastal and Land Use Compliance and Enforcement, Toms River
Borough of Avalon Construction Official

**APPENDIX D
2020 Dune Priority Mapping
And
Priority Descriptions**



SHEET 1 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE: 12-17-2020

DRAWN BY: CPW

NOT TO SCALE



Legend

- Priority T1
 - Priority T2
 - Priority T3
 - DVMP Project
 - Private Property
- Recommended Next Evaluation 2021

NOTES:

1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
2. PRIVATE PROPERTY CONTAINING DENSE STANDS OF JAPANESE BLACK PINE ADJACENT TO THE DUNE SYSTEM ARE NOTED IN ORANGE.
3. PRIORITY MAPPING OVERLAIN ON TOPOGRAPHIC SURVEY PREPARED BY HATCH MOTT MACDONALD BASED ON SURVEY CONDUCTED IN MARCH, 2005.



SHEET 2 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

DRAWN BY:
CPW

NOT TO SCALE

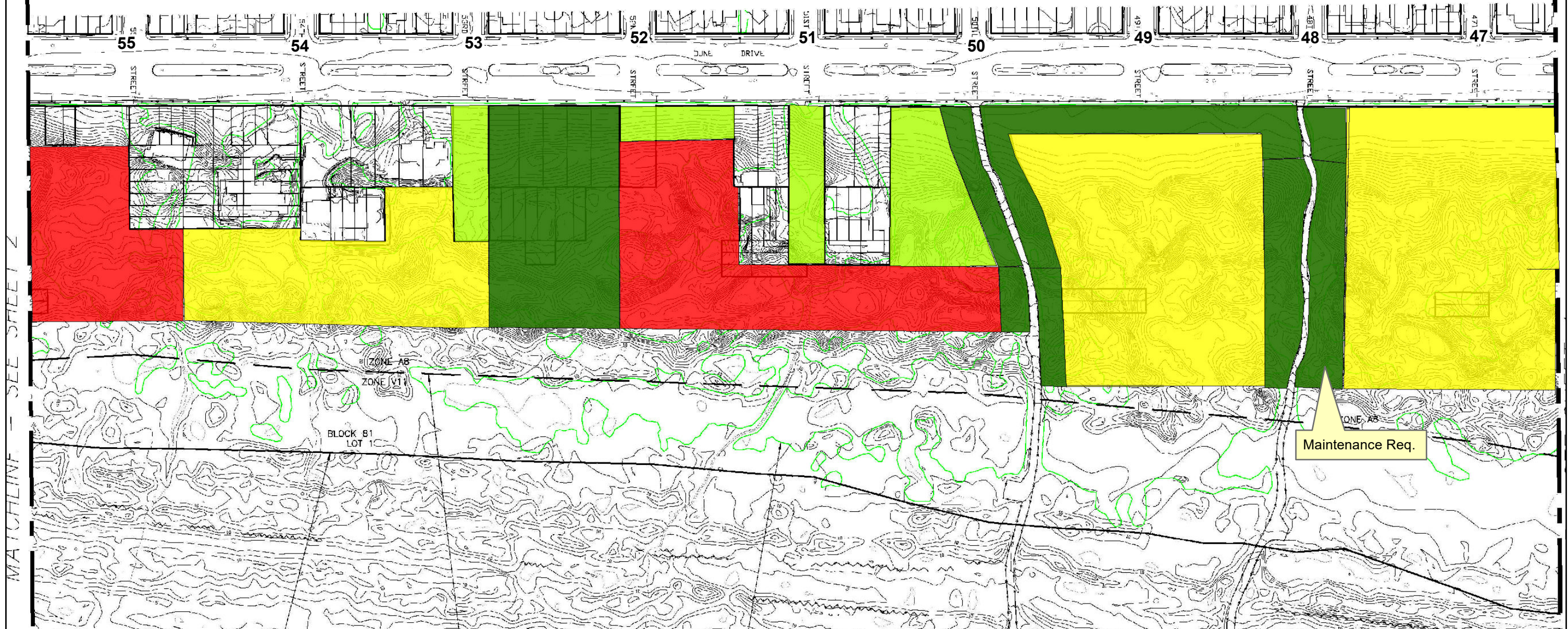


Legend

- Priority T1
 - Priority T2
 - Priority T3
 - DVMP Project
 - Private Property
- Recommended Next Evaluation 2021

NOTES:

1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
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SHEET 3 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

DRAWN BY:
CPW

NOT TO SCALE

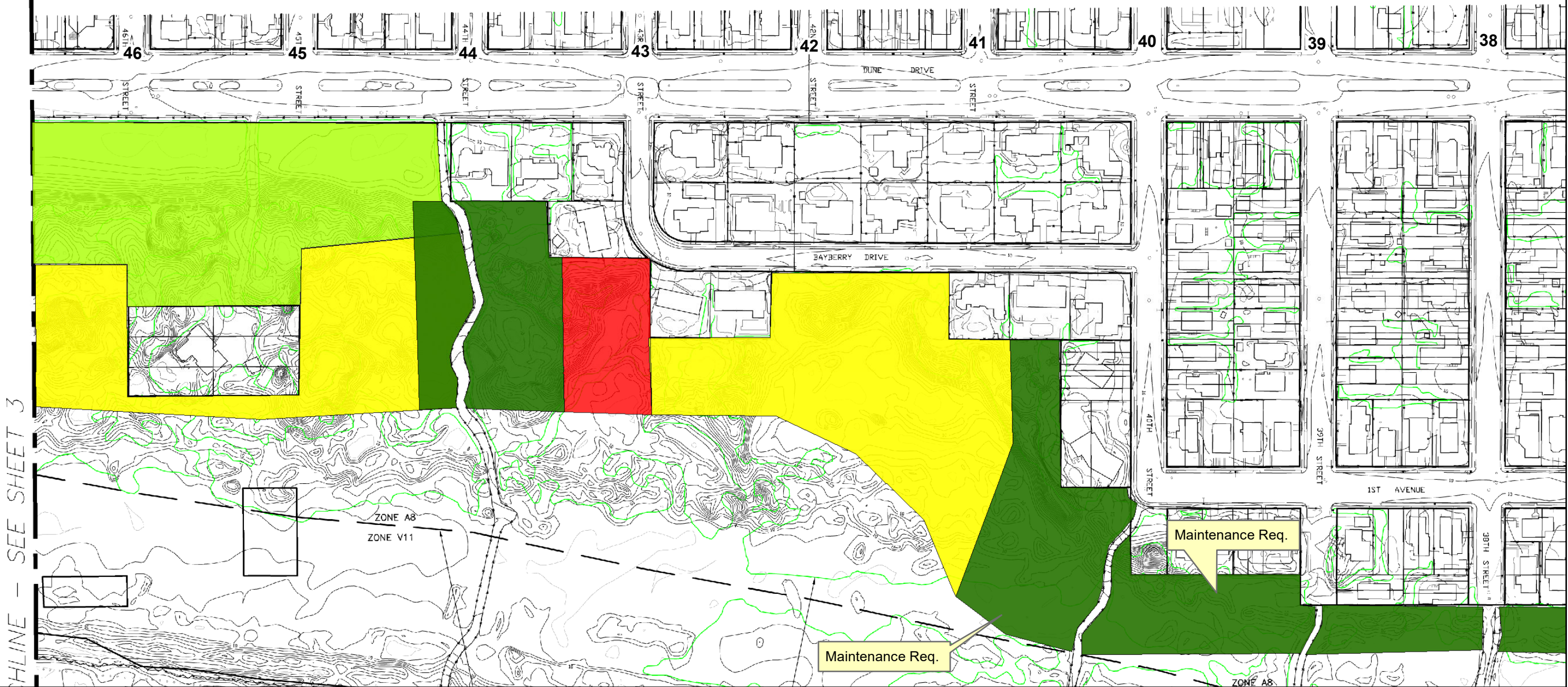


Legend

- DVMP Project
 - Priority T1
 - Priority T2
 - Priority T3
 - Private Property
- Recommended Next Evaluation 2021

NOTES:

1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
2. PRIVATE PROPERTY CONTAINING DENSE STANDS OF JAPANESE BLACK PINE ADJACENT TO THE DUNE SYSTEM ARE NOTED IN ORANGE.
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HLINE - SEE SHEET 3

SHEET 4 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

DRAWN BY:
CPW

NOT TO SCALE

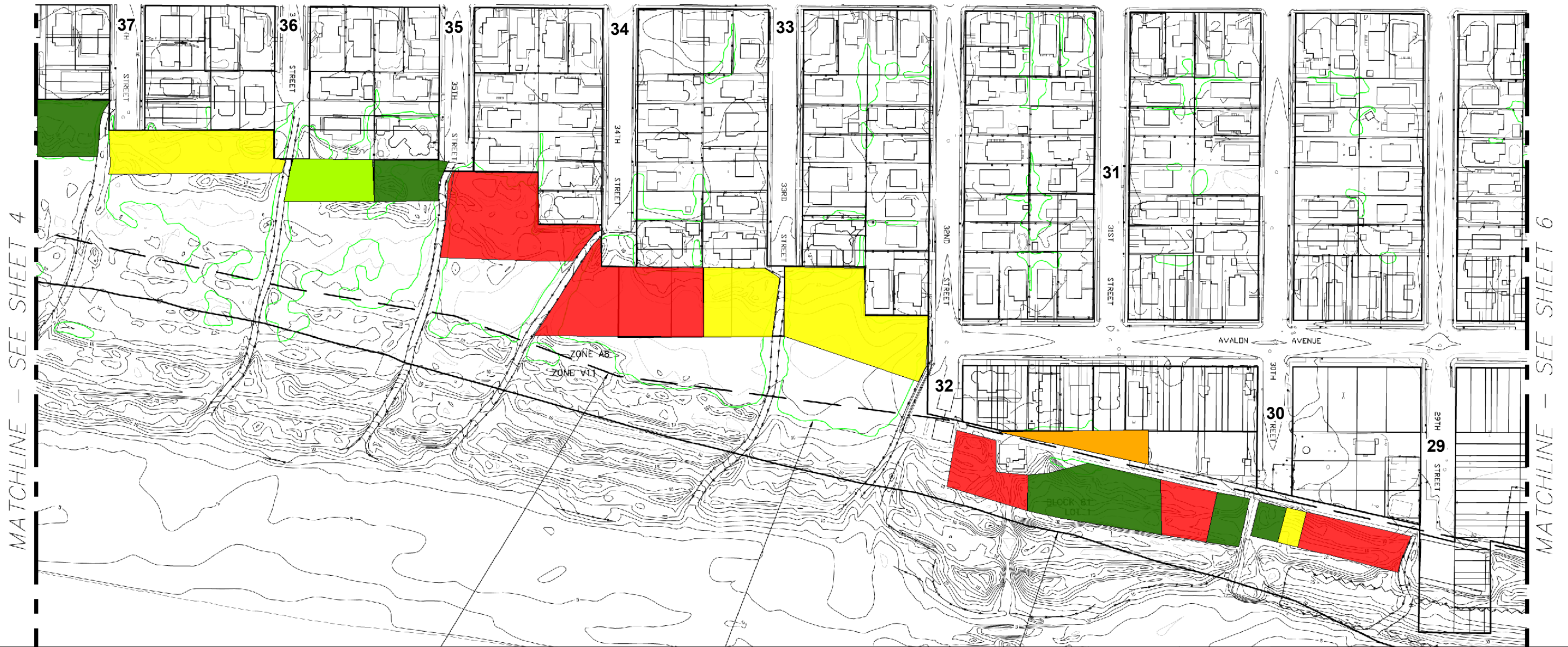


Legend

- Priority T1
- Priority T2
- Priority T3
- DVMP Project
- Private Property
- Recommended Next Evaluation 2021

NOTES:

1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
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SHEET 5 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

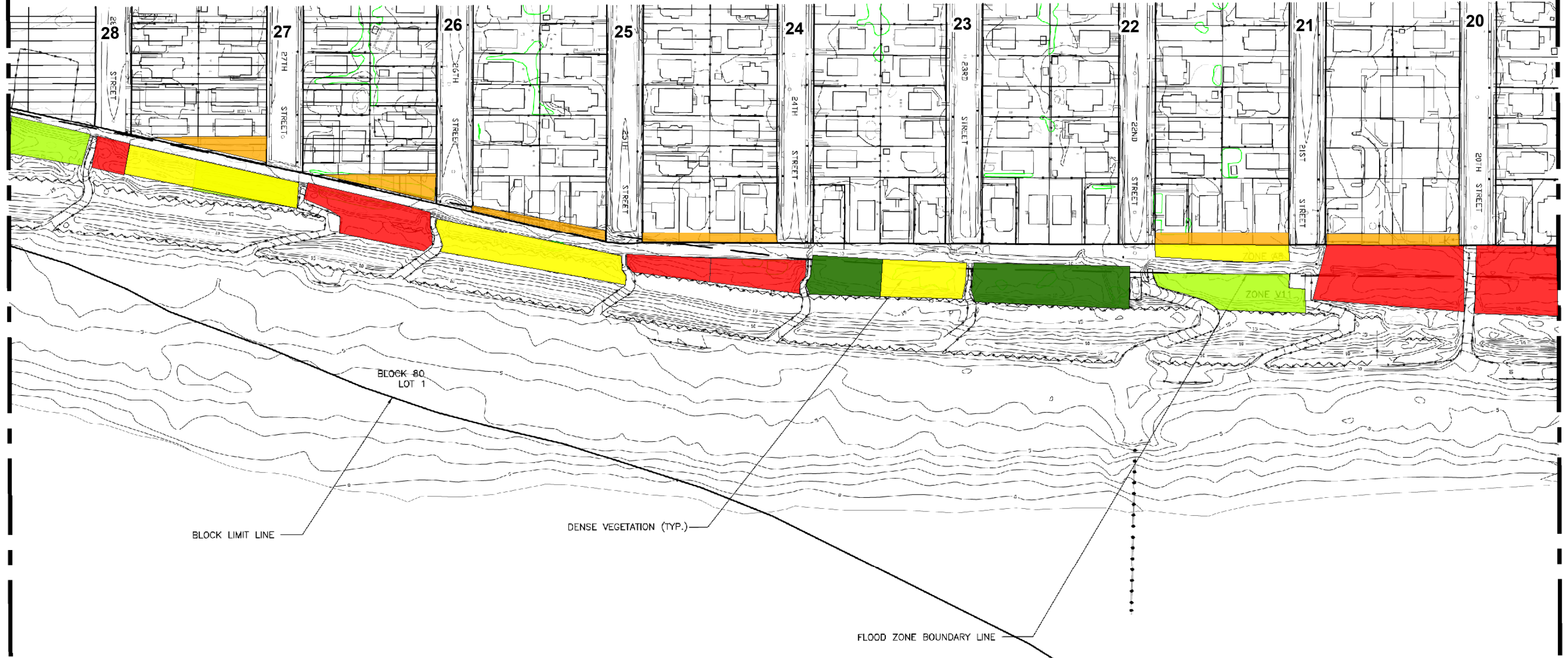
DRAWN BY:
CPW

NOT TO SCALE



- Legend**
- Priority T1
 - Priority T2
 - Priority T3
 - DVMP Project
 - Private Property
- Recommended Next Evaluation 2021

- NOTES:**
1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
 2. PRIVATE PROPERTY CONTAINING DENSE STANDS OF JAPANESE BLACK PINE ADJACENT TO THE DUNE SYSTEM ARE NOTED IN ORANGE.
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SHEET 6 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

DRAWN BY:
CPW

NOT TO SCALE



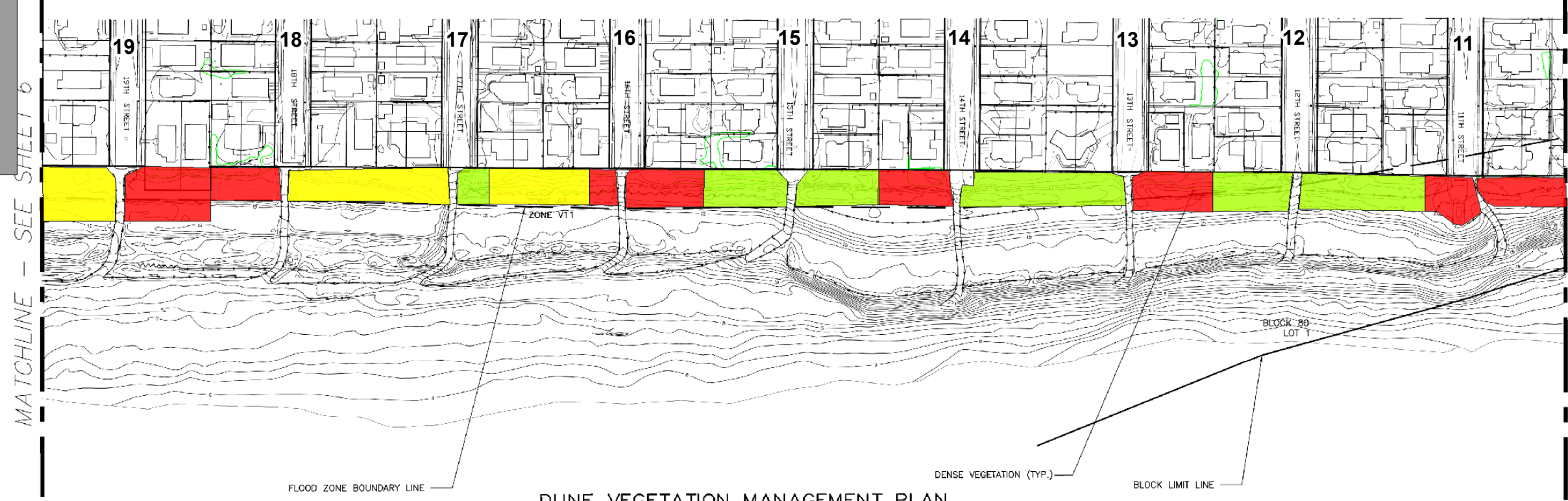
Legend

- Priority T1
- Priority T2
- Priority T3
- DVMP Project
- Private Property
- Recommended Next Evaluation 2021



LEGEND

- CONTOUR LINE
- FENCE
- DENSE VEGETATION
- PARCELS
- BLOCK LIMIT LINE
- FLOOD ZONE BOUNDARY LINE



DUNE VEGETATION MANAGEMENT PLAN



- NOTES:**
1. THE LOMAX CONSULTING GROUP RECOMMENDS NEXT EVALUATION OF THE DUNE AREAS IN 2021.
 2. PRIVATE PROPERTY CONTAINING DENSE STANDS OF JAPANESE BLACK PINE ADJACENT TO THE DUNE SYSTEM ARE NOTED IN ORANGE.
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SHEET 7 OF 7: DUNE VEGETATION MANAGEMENT PROGRAM PRIORITY MAP - 2020

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> AND THE CUMBERLAND COUNTY PLANNING DEPARTMENT

DATE:
12-17-2020

DRAWN BY:
CPW

NOT TO SCALE



Dune Vegetation Management Plan Priority Mapping – Priority Descriptions

The following is the description of the Dune Vegetation Management Plan Priority Mapping designations describing the occurrence of the invasive populations of the Japanese Black Pine in the dune system and associated priority for their removal (T1 and T2). In addition, areas without damaging concentrations of Japanese Black Pine (T3), DVMP Project areas that have been restored, DVMP Projects currently in the process of restoration are delineated. Oceanfront areas under private ownership containing concentrations of Japanese Black Pine are also designated. Further, areas where completed DVMP projects require maintenance are noted.

Priority T1 (red) = Areas with high concentrations of Japanese black pine and/or large, dead/dying, or hazardous specimens to private property

Priority T2 (yellow) = Areas with lower numbers of Japanese black pine, usually less than 5 individuals

Priority T3 (light green) = Areas with no currently visible Japanese black pine

DVMP Project (dark green) = Locations of previous and/or completed approved DVMP projects

Pending DVMP Project (orange striped) = Location of approved DVMP project that has not completed Japanese black pine removal or replanting yet

Private Property (orange) = Locations of concentrations of Japanese black pine on private property not included in the Borough dune area

The Lomax Consulting Group
December 2020

**APPENDIX E
DVMP Application Process**

AVALON DUNE VEGETATION MANAGEMENT PLAN

APPLICATION PROCESS

Introduction

The Borough of Avalon has recognized the importance of the dunes and their associated native vegetation through the development and implementation of a Dune Vegetation Management Plan since 2009. As such, the removal from the dune system of invasive and/or damaging vegetation, such as (1) the Japanese Black Pine (JBP), (2) excessive vine growth that negatively impacts the health of native trees and shrubs, and (3) bamboo is important to maintain the integrity of the dunes. Dunes produce many benefits to the public, in that they help to protect the community from coastal storms and support unique ecosystems and habitats that are of significant environmental interest to residents and visitors, alike. In addition, the scenic interplay of the dunes and beach, sky and sea create an everchanging and fascinating coastal aesthetic. The concurrent replacement of the invasive and damaging vegetation with native vegetation lies at the heart of this Plan. For more than ten years, projects have been conducted within the Borough employing various techniques for damaging vegetation removal, dune restoration with native vegetation and methods to promote plant survival, such as temporary irrigation. In addition, the Approved List of Dune Vegetation is used by the Avalon Environmental Commission to guide the selection of replacement native vegetation for dune restoration.

The Borough of Avalon welcomes the opportunity to enter into cooperative agreements with homeowners in order to meet the intent and provisions of the Dune Vegetation Management Plan. Accordingly, all work must be consistent with the Dune Vegetation Management Plan and approved by the Avalon Environmental Commission. The following outlines the application process for homeowners (Project Sponsors) and their landscapers:

1. The Project Sponsor contacts the Borough of Avalon Administrator's office (Mr. Scott Wahl) by providing a letter of interest for participation in the Dune Vegetation Management Program. Include the homeowners contact information, address, a brief project description, and show the limits of the project area on an aerial plan.
2. Borough representatives (The Lomax Consulting Group – TLCG) receive authorization to conduct a preliminary site investigation to determine if the proposed site is a candidate for the Dune Vegetation Management process.
3. TLCG provides a consulting fee proposal and pre-application fee to the applicant for coordination, planning, and oversight of the proposed project. The pre-application fee is provided to the Borough with a W-9 Form completed by the Project Sponsor to establish an escrow account for the project to be managed by the Borough.
4. TLCG identifies the vegetation to be removed or pruned; TLCG, a landscape architect, and/or a landscape contractor identifies the vegetation used in the dune restoration and prepares a proposed planting plan with a breakdown of the replacement native vegetation (size, quantity, number and location of each species). Species used for replacement plantings are selected from the Approved List of Dune Vegetation.
5. The Project Sponsor selects and obtains a proposal from a private landscape contractor to conduct the removal of invasive vegetation replacement. Landscape contractors are required to provide a certificate of insurance to the Borough at this time.

6. TLCG coordinates with the Avalon Environmental Commission to present the proposed project at their next available meeting. TLCG prepares presentation materials to use for the AEC project assessment including site photography and GIS mapping illustrating: (1) the extent of the detrimental dune vegetation inventory by using GPS equipment (Figure 1: Detrimental Vegetation Location Plan) and (2) the proposed planting areas for the subject application (Figure 2: Planting Plan).
7. TLCG notifies property owners adjacent to/within 200 feet of the DVMP area of proposed project prior to submission to the AEC.
8. TLCG presents the application and proposed removal/restoration plans to the Avalon Environmental Commission for review and recommendations. The Avalon Environmental Commission gives their recommendation to Approve, Conditionally Approve, or Deny the application.
9. If the Avalon Environmental Commission approves the application, an Avalon Zoning Application is prepared by the Borough, the Memorandum of Agreement is drafted by the Borough Solicitor and escrow amounts to be held by the Borough of Avalon, are established.
 - Escrow = Landscape Contractors Proposal +TLCG Environmental Consulting Proposal – Pre-Application Fee
10. Borough Solicitor provides the Memorandum of Agreement to the Project Sponsor for review and endorsement. The Project Sponsor provides the endorsed Memorandum of Agreement to the Borough with the requested escrow fees.
11. Once the Borough has all administrative items satisfied (signed Memorandum of Agreement and escrow fees) they record the Memorandum of Agreement at the County Clerks Office and contact TLCG who coordinates the work with the landscape contractor. Escrow fees are released to the landscape contractor after the work has been completed and inspected.
12. Following the installation of the plant material, the homeowner is responsible for maintaining an 85% survivorship of the plant material for a period of 3 years. The success of the plants is monitored at the end of each full growing season by TLCG who will prepare an annual monitoring report provided to the homeowner and the Avalon Environmental Commission.
13. If the project is deemed successful following the required 3 years of monitoring, the project can be decommissioned. If a project is decommissioned, the Project Sponsor can request, in writing, to the Borough Administrator that the escrow account associated with the project be closed and any remaining funds be released back to the Project Sponsor.
14. If the project planting and volunteer native species growth has not achieved 85% coverage, additional remedial planting and monitoring may be required.

APPENDIX F

Draft Memorandum of Agreement

Exhibit A. Borough's Representative Estimate *

Exhibit B. Sponsor's Landscaper Estimate *

**Exhibit C. Avalon Environmental Commission
Report and Recommendation ***

*** To be prepared for each specific DVMP project**

DRAFT
MEMORANDUM OF AGREEMENT

WHEREAS, the Borough of Avalon doing business at 3100 Dune Drive, Avalon, New Jersey (hereinafter referred to as “Borough”) and SPONSOR, his/her successors and assignees owning property at ADDRESS, Avalon, NJ, 08202 (hereinafter referred to as “Property Owner”) recognize that the proliferation of non-indigenous and nuisance vegetation and trees, including but not limited to the Japanese black pine (*Pinus thunbergiana*), are having a deleterious impact upon the beach/dune system by displacing native species, damaging native trees and creating fire hazards as a result of an inordinate amount of fire prone tinder within the dunes, and

WHEREAS, the Borough and the Property Owner believe that it is in the best interests of the structural integrity of the dunes and the health, safety and welfare of the citizens of Avalon to develop a plan for the thinning, trimming, removal and/or replacement of these non-indigenous and nuisance vegetation and trees, including but not limited to the Japanese black pine, together with the removal of dead or dying vegetation as a result of disease or insect action and the replacement of same with appropriate indigenous and native species which will enhance and fortify the dune system, and

WHEREAS, a Municipal Master Permit has been established, which grants private land owners and/or the Borough a General Permit Authorization to conduct such actions in accordance with criteria specified in the Dune Vegetation Management Plan. The creation of the Master Permit and General Permit System will streamline the overall process and provide for a more efficient systematic approach to dune vegetation management, and

WHEREAS, as a result of the amended Beach Protection Ordinance adopted by the Borough of Avalon, as required under the State Aid Agreement of 1994, it is unlawful to disturb, remove or redistribute sand or vegetation within the beach/dune area without full compliance with the Borough Dune Vegetation Management Plan. The application process pursuant to the Dune Vegetation Management Plan includes the preparation of an application and submission of necessary documentation, the review of that application and documentation by the Borough of Avalon Environmental Commission, which must recommend the proposed action by way of a written report, which must then be submitted to the Avalon Zoning Officer for final approval, and

WHEREAS, certain areas within the dunes containing non-indigenous and nuisance vegetation and trees, including but not limited to Japanese black pines, exist on both public and private land adjacent to one another, and

WHEREAS, given that the application process and preparation of supporting documentation, which will include professional expenses, can be time-consuming and result in significant monetary expenditures, and

WHEREAS, as a result of the factors set forth above, the Borough and Property Owner agree that a joint application submitted by both Borough and Property Owner, and potentially other adjacent property owners, is the most efficient and effective manner to make said application under the Beach Protection Ordinance by utilizing the joint resources of the parties, requiring only one review by the Environmental Commission and providing for a larger and more comprehensive plan for the eradication of the non-indigenous and nuisance vegetation and trees;

NOW, THEREFORE, by way of execution of this Memorandum of Agreement, the Borough and Property Owner do hereby agree as follows:

1. Borough and Property Owner have cooperated with one another in the submission of a joint application under the Avalon Beach Protection

5. Borough and Property Owner hereby acknowledge that the application and plan has been reviewed and approved by the Borough of Avalon Environmental Commission which has issued a written report and with recommendations by correspondence dated _____ which as attached as Exhibit "C" and incorporated herein. The parties do now hereby agree to proceed with plan for the trimming, thinning, removal and/or replacement of non-indigenous and nuisance trees and vegetation at the parties' properties in the manner set forth above and in full compliance with the Dune Vegetation Management Plan, the Remediation Plan submitted to the Environmental Commission and the recommendations of the Environmental Commission attached hereto.
6. The financial obligations of the Property Owner shall extend beyond the cost of the preparation and prosecution of the application, plan and initial anticipated remedial work. Additional costs may include the cost of unanticipated remedial work, vegetation management, monitoring of replacement vegetation and additional costs of replacement vegetation in the event of unsuccessful plantings. In the event of unsuccessful plantings after the initial remedial work, the Property Owner shall have an affirmative obligation to permit and pay for supplemental plantings to comply with the approved plan. The Borough shall submit documentation of all professional and other expenses to the Property Owner who shall then reimburse the Borough said costs and fees within thirty days of the submission of said documentation. The Property Owner shall also bear the responsibility of properly watering new trees and vegetation as recommended by the Environmental Commission.
7. As this Agreement and the understanding of the parties contemplates a three (3) year monitoring period and a requirement of eight-five (85%) percent survivor rate of the newly planted vegetation, in the event that title to the Property Owner's land transfers, it is important to create a mechanism to put future property Owner on notice of the potential liability resulting from this Agreement. Accordingly, the Property Owner shall permit the Borough to file

this Memorandum of Agreement in the Cape May County Clerk's Office Book of Land Records evidencing the potential future financial obligations attached to the Subject Property pursuant to this Memorandum of Agreement.

8. In the event that the Property Owner defaults on any provision or obligation contained in this Agreement by more than 60 days, or fails to actively participate and proceed with the Plan, the Borough, at its sole discretion, upon notice to the Property Owner, may deem this Agreement null and void and terminate the process. The Borough shall return any unused escrow amounts to the Property Owner. Recommencement of the process thereafter shall require a new Memorandum of Agreement and the posting of new application and escrow fees by the Property Owner.
9. In the event that the Borough expends fees and expenses in support of this agreement, and in reliance of same, and the Property Owner does not satisfy its financial obligations to the Borough, the Property Owner shall be liable to the Borough for all attorney's fees and costs associated with any action to enforce the terms of this agreement together with the fees and expenses incurred.
10. Consideration for this Memorandum of Agreement is based upon the mutual duties, obligations and responsibilities of the parties, each of whom has relied upon the promises and representations of the other in the execution of this agreement.
11. Execution of this agreement shall constitute a binding obligation on both parties to fully proceed with the entire project process which shall include the preparation of the application, preparation of all necessary supporting documentation, payment of all application fees and escrow expenses, payment of all professional fees, attendance at any required hearings, completion of approved remedial work and the payment of all monetary expenditures as agreed upon between the parties.

Borough of Avalon

Witness: _____

By: _____

Scott Wahl

Dated: _____

Property Owner

Witness: _____

By: _____

PROJECT SPONSOR

Dated _____

STATE OF NEW JERSEY, COUNTY OF CAPE MAY SS.:

I CERTIFY that on _____, 2019

SCOTT WAHL Personally came before me and acknowledged under oath, to my satisfaction, that this person (or if more than one, each person):

- (a) is named in and personally signed this Document:
- (b) signed, scaled and delivered this Document as his or her act and deed: and

STATE OF _____, COUNTY OF _____ SS.:

I CERTIFY that on _____, 2019

_____ Personally came before me and acknowledged under oath, to my satisfaction, that this person (or if more than one, each person):

- (c) is named in and personally signed this Document:
- (d) signed, scaled and delivered this Document as his or her act and deed: and

EXHIBIT A

EXHIBIT B

EXHIBIT C

APPENDIX G
Approved List of Dune Vegetation



APPROVED LIST OF DUNE VEGETATION

Adapted vegetation is an integral part of the overall dune system that is vital to the protection to the Borough from coastal storms. This vegetation not only aids sand deposition and accumulation, but also serves to retain the sand in the dune system. Accordingly, the selection of plants that will survive and flourish in the harsh environment of the dune system is critical. The Borough of Avalon dune system is a diverse ecosystem exposed to wind and salt spray. The dune soils are sandy; and as such are droughty. In recognition of these conditions, the following vegetation list has been 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. The criteria for selection of the following plants for dune re-vegetation with native species include: (1) adaptation to survival in the dune environment; (2) resistance to disease and pests; (3) drought hardiness after they are established; (4) ability to be pruned to control shape and height, if trimming is begun early in the tree/shrub development, and (5) availability from nurseries.

The following information has been provided through literature review, direct dune observations in natural areas of coastal barrier island communities and Island Beach State Park, in addition to personal experience and communications with other qualified professionals in the field. One asterisk (*) indicates that this species is used by wildlife for food (including pollinators) and cover. Two asterisks (**) indicates that the plant has high wildlife value. (E) indicates that the plant is evergreen.

A. Salt Spray Tolerant Vegetation

1. **Trees:**

<u>Common Name</u>	<u>Scientific Name</u>
Eastern red cedar *(E)	<i>Juniperus virginiana</i>
Black cherry **	<i>Prunus serotina</i>
Winged sumac **	<i>Rhus copallinum</i>
Smooth sumac **	<i>R. glabra</i>

2. **Shrubs:**

<u>Common Name</u>	<u>Scientific Name</u>
Northern bayberry **(E)	<i>Morella pensylvanica</i>
Wax myrtle *	<i>M. cerifera</i>
Beach plum *	<i>Prunus maritima</i>
Groundsel *	<i>Baccharis halimifolia</i>
Bearberry (E)	<i>Arctostaphylos uva-ursi</i>
Beach-heather (E)	<i>Hudsonia tomentosa</i>

3. **Vines:**

<u>Common Name</u>	<u>Scientific Name</u>
Virginia creeper **	<i>Parthenocissus quinquefolia</i>



Salt Spray Tolerant Vegetation (continued)

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

B. Sheltered Upland Dune Vegetation

1.	Trees:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Pitch pine **(E)	<i>Pinus rigida</i>
	Eastern red cedar *(E)	<i>Juniperus virginiana</i>
	Sassafras **	<i>Sassafras albidum</i>
	Hackberry **	<i>Celtis occidentalis</i>
	American holly *(E)	<i>Ilex opaca</i>
	Scarlet oak **	<i>Quercus coccinea</i>
	Black oak **	<i>Q. velutina</i>
	Blackjack oak **	<i>Q. marilandica</i>
	Scrub oak **	<i>Q. ilicifolia</i>
	Pignut hickory *	<i>Carya glabra</i>
	Mockernut hickory *	<i>C. tomentosa</i>
	Hop-hornbeam *	<i>Ostrya virginiana</i>
	Winged sumac **	<i>Rhus copallinum</i>
	Smooth sumac **	<i>R. glabra</i>
	Persimmon **	<i>Diospyros virginiana</i>
2.	Shrubs:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Northern bayberry **(E)	<i>Morella pensylvanica</i>
	Wax myrtle *	<i>M. cerifera</i>
	Beach plum *	<i>Prunus maritime</i>
	Groundsel *	<i>Baccharis halimifolia</i>
	Inkberry holly **(E)	<i>Ilex glabra</i>
	Low rose **	<i>Rosa carolina</i>
	Sweet fern *	<i>Comptonia peregrina</i>



B. Sheltered Upland Dune Vegetation (continued)

3.	Vines:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Climbing bittersweet *	<i>Celastrus scandens</i>
	Trumpet vine *	<i>Campsis radicans</i>
4.	Herbaceous:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Bitter panicgrass *	<i>Panicum amarum</i>
	Coastal panicgrass *	<i>Panicum amarum var. amarulum</i>
	Saltmeadow cordgrass	<i>Spartina patens</i>
	Switchgrass **	<i>Panicum virgatum</i>
	Bluestem	<i>Schizachyrium scoparium</i>
	Seaside goldenrod **	<i>Solidago sempervirens</i>
	Beach pea *	<i>Lathyrus japonicus</i>
	Partridge pea *	<i>Chamaecrista fasciculata</i>
	Rough cocklebur	<i>Xanthium strumarium</i>
	Dusty miller	<i>Artemisia stelleriana</i>
	Prickly pear * (E)	<i>Opuntia humifusa</i>
	Spanish bayonet * (E)	<i>Yucca filamentosa</i>
Yarrow *	<i>Achillea millefolium</i>	
Butterfly Milkweed **	<i>Asclepias tuberosa</i>	

C. Sheltered Wetland Dune Vegetation (Interdunal Swales)

1.	Trees:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Red maple *	<i>Acer rubrum</i>
	Serviceberry *	<i>Amelanchier arborea</i>
	Shadbush *	<i>A. canadensis</i>
	Southern red oak *	<i>Quercus falcata</i>
	Willow oak *	<i>Q. phellos</i>
	Black gum *	<i>Nyssa sylvatica</i>
	Sweetbay *(E)	<i>Magnolia virginiana</i>
	Atlantic white cedar (E)	<i>Chamaecyparis thyoides</i>
2.	Shrubs:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Maleberry *	<i>Lyonia ligustrina</i>
	Black chokeberry *	<i>Photinia melanocarpa</i>
	Red chokeberry *	<i>P. pyrifolia</i>
	Inkberry **(E)	<i>Ilex glabra</i>
	Southern arrowwood **	<i>Virburnum dentatum</i>
	Sweet pepperbush *	<i>Clethra alnifolia</i>
	Black huckleberry **	<i>Gaylussacia baccata</i>
	Winterberry **	<i>Ilex verticillata</i>
Highbush blueberry **	<i>Vaccinium corymbosum</i>	



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

3.	Herbaceous:	
	<u>Common Name</u>	<u>Scientific Name</u>
	Saltmeadow cordgrass	<i>Spartina patens</i>
	Switchgrass **	<i>Panicum virgatum</i>
	Spike grass	<i>Distichlis spicata</i>
	Saltmeadow rush	<i>Juncus gerardii</i>
	Salt-marsh bulrush	<i>Scirpus robustus</i>
	Common threesquare	<i>S. pungens</i>

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609-465-2449 (Fax)

December 16, 2009, Revised: April 10, 2012; July 25, 2013; Sept. 11, 2013, May 29, 2014; Last revised May 23, 2017

APPENDIX H

Example of Dune Restoration Plans

The invasive trees are geo-located and presented in Figure 1 and the Dune Vegetation Management (Restoration) Plan is presented in Figure 2.

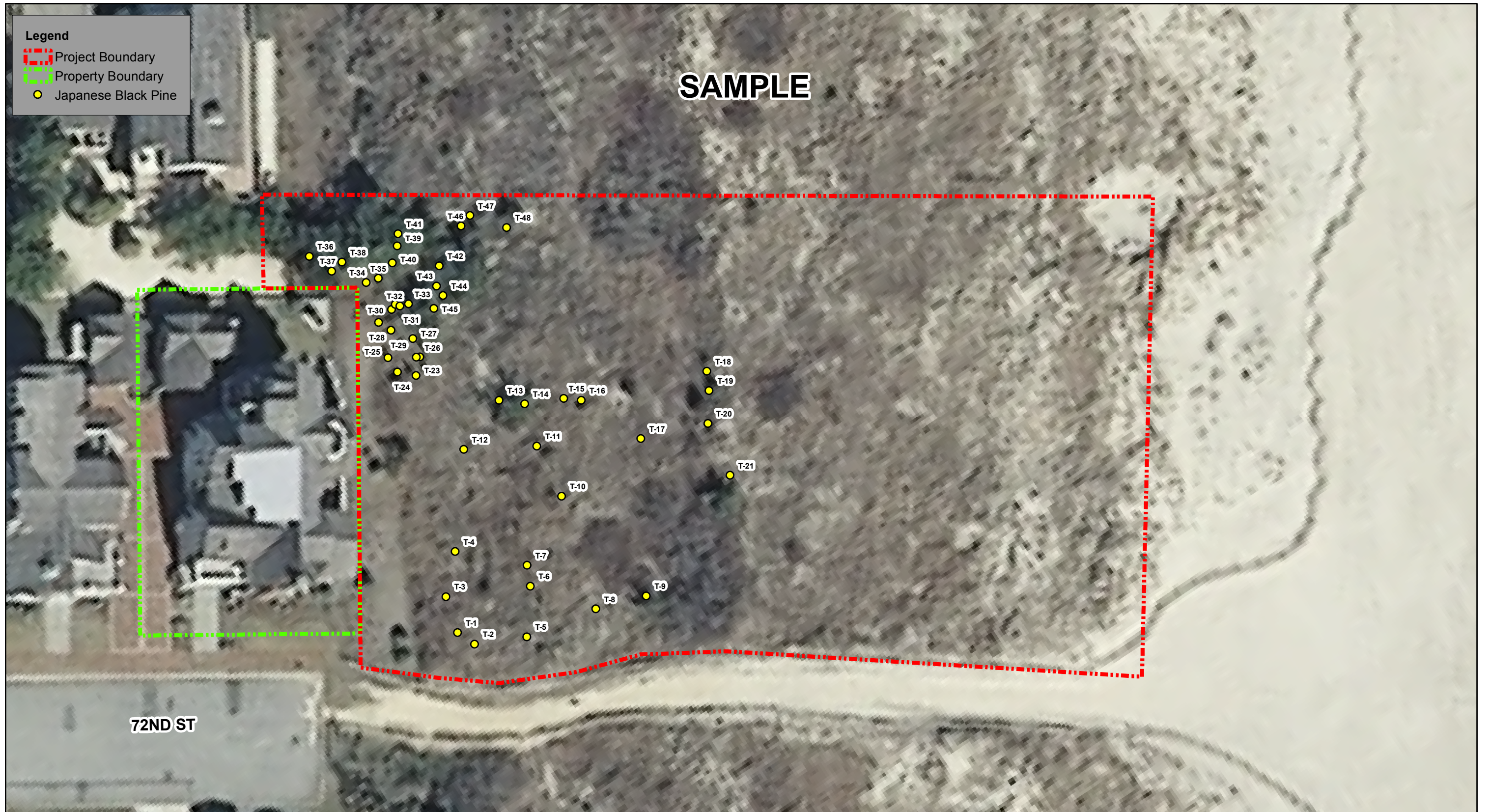


FIGURE 1: SITE LOCATION ON NJDEP CURRENT AERIAL MAPPING OF THE BOROUGH OF AVALON WITH LOCATION OF JAPANESE BLACK PINES FOR 72ND STREET NORTH
SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/>, NEARMAPS AND THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE:
1-9-2020

DRAWN BY:
CPW

1 inch = 30 feet



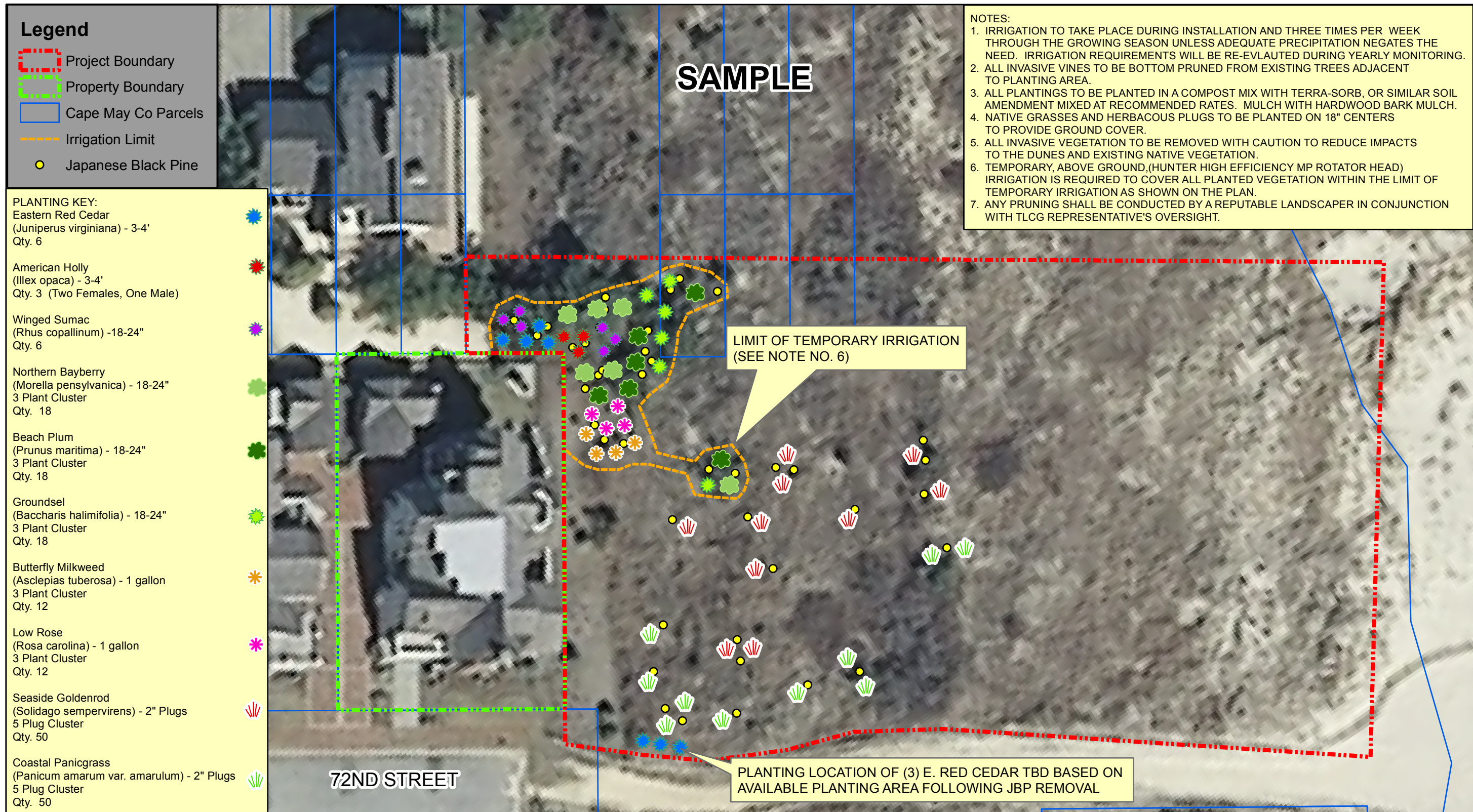


FIGURE 2: SITE LOCATION ON NJDEP CURRENT AERIAL MAPPING OF THE BOROUGH OF AVALON WITH PLANTING PLAN FOR 72ND STREET NORTH

SOURCE: GIS DATA PROVIDED BY THE NJDEP AT <http://njgin.nj.gov/> & THE CAPE MAY COUNTY PLANNING DEPARTMENT

DATE: 12-10-19	DRAWN BY: CPW
1 inch = 30 feet	

the LOMAX Consulting group

P:\Active\99-650\001 General Consulting\Reports & Application Docs\2019 Revisions to 2009 DVMP\Site Mapping\PLANTING PLAN 11 X17

APPENDIX I
Dune Vegetation Pruning Protocols

DUNE VEGETATION PRUNING PROTOCOLS

The Avalon Dune Vegetation Management Plan (DVMP) allows for the authorization of limited maintenance pruning of dune vegetation on Borough property that meets Borough and Avalon Environmental Commission (AEC) standards. The following is an update of the steps required to obtain authorization and to outline how maintenance pruning is to be conducted within the Borough's dune system:

1. The project sponsor(s) contact the Office of the Borough Administrator providing a letter requesting authorization under the DVMP program for a maintenance pruning project. Maintenance pruning projects are limited to no more often than once every two years on any area of the dune system. However, damaging vines may be bottom pruned annually, if requested.
2. The Borough forwards the request to its representative to conduct a site investigation to determine if the proposed site is a candidate for a DVMP continued maintenance pruning project.
3. If the request is consistent with the DVMP, the Borough representative submits a consulting fee proposal to the project sponsor(s) for the preparation of a maintenance pruning plan and oversight of the maintenance pruning.
4. Approval of the Borough representative's proposal by the sponsor(s) includes the submission of an application fee to establish an escrow budget to complete the work in order to start a proposed project. The escrow is held by the Borough and dispersed as phases of the work are completed. The project sponsor(s) provides the application fee to the Borough with a W-9 Form to establish the escrow, if an existing escrow has not already been established.
5. Notification must be made to property owners within 200 feet of the area of the proposed pruning project prior to submission to the AEC.
6. The Lomax Consulting Group (TLCG) submits the proposed pruning plan to the AEC for review. The Borough representative prepares presentation materials including site photography and GIS-based or generated mapping illustrating the extent of proposed maintenance pruning. Maintenance pruning is limited to no more than 10% or up to 18 inches of the existing foliage, whichever is less, and cannot be pruned beyond the benchmarks established by any previously approved maintenance pruning.
7. The AEC may Approve, Conditionally Approve, or Deny the request for maintenance pruning. If Approved, the Commission prepares a letter authorizing the proposed maintenance pruning.
8. Upon approval by the AEC, a private landscape contractor is selected by the project sponsor(s) to conduct the maintenance pruning within the guidelines prepared by the Borough. The landscaper provides to the Borough credentials to work in the Borough's dunes and commitment to conduct work consistent with the approved Plan.
9. If the pruning plan is approved by the AEC, the Borough will enter into a Memorandum of Agreement (MOA) with the project sponsor(s). The sponsor(s) and their landscaper will

adhere to the Borough's Pruning Protocols, DVMP guidelines, and any site-specific requirements of the AEC in their approval letter. Further, a statement shall be included in the MOA that: (a) no dune vegetation will be pruned by the project sponsor(s), their landscaper or agent at any time without site-specific Borough authorization; (b) that no pruning shall occur unless such actions are pre-arranged and overseen by the authorized representative of the Borough; (c) that this approval authorizes the one-time pruning of dune vegetation and any subsequent pruning will require Borough authorization; (d) that the landscaper will provide a Certificate of Insurance naming the Borough as a co-insured; and (e) that funds provided by the project sponsor(s) will be escrowed with the Borough to cover the costs associated with pruning assessment, plan development, coordination, pruning, oversight and preparation of a final report to AEC.

10. Oversight of the maintenance pruning is provided by a Borough representative. The project sponsor(s) must be present during the maintenance pruning as well or provide access to a vantage point to ensure that maintenance pruning is completed.
11. Should pruned vegetation fail or be damaged due to maintenance pruning activities, replacement of the damaged vegetation with similar species will be required in compliance with DVMP planting guidelines.
12. If the project sponsor(s) seek to continue maintenance pruning in subsequent years, a request must be submitted to the Borough for the AEC to act on a DVMP project for continued maintenance pruning. If approved, AEC will issue an extension letter to continue maintenance pruning activities under the previously approved MOA. Subsequent maintenance pruning can not be conducted more often than every other year and must comply with these protocols.

Last Revised November 30, 2020; The Avalon Environmental Commission has reviewed and recommended inclusion in the Plan.

APPENDIX J
Standard for Creating and Restoring Sand Dunes
From Massachusetts to North Carolina
Prepared by
Staff of the Cape May Plant Materials Center,
National Resources Conservation Service (USDA)

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

DEFINITION: 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 Virginia 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 fasciculata*)
- 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 Peninsula 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 broadening 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 successional 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, $\geq \frac{1}{4}$ 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 Peninsula & south).** Within its 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 = \geq 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 dominant 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 = \geq 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 its 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 = \geq 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 = \leq 50 lbs. of nitrogen (N) per acre, \leq 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 (≥ 12 ga.) must be used to secure fencing to each post.

2) Posts:

- Wooden posts must be $\geq 6\frac{1}{2}$ 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 ≥ 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 $\frac{3}{4}$ 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