

City of Newburyport

Plum Island

Beach Management Plan

Submitted to:

Newburyport Conservation Commission
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City of Newburyport PLUM ISLAND BEACH MANAGEMENT PLAN

I. PURPOSE OF THE PLAN

The public beaches in the City of Newburyport, Massachusetts are located on Plum Island, stretching from the city line with Newbury to the northern areas of the island (Figures 1 and 2). The primary public beach is located along the ocean shoreline and the southern shore of the Merrimack River. The city beaches provide a number of recreational opportunities to the public, including swimming, fishing, walking and boating.

Most of the property that is the subject of this plan is owned by the Commonwealth of Massachusetts but is managed by the City of Newburyport. In 1978, the City of Newburyport entered into a land management agreement with Massachusetts Department of Environmental Management (now the Department of Conservation and Recreation). A copy of the original agreement is presented in Appendix A. Executive Order 181 (issued in 1980) dictates that management plans for State-owned beach property shall be prepared and be consistent with state wetland policy (see Appendix B).

Plum Island is a barrier beach which also contains areas of coastal dunes and salt marsh located behind the beach. These coastal resource areas are all located within a complex barrier beach system. Because the city beach is within a highly dynamic and sensitive ecosystem and there is such a great demand for public use, the City of Newburyport is tasked with finding and maintaining a balance between providing safe and enjoyable recreational opportunities to its visitors, while protecting the barrier beach system, which includes fragile coastal dunes, coastal beach, rare species and wildlife habitat.

In Massachusetts, a barrier beach is a resource area provided protection under the Massachusetts Wetlands Protection Act (WPA), Massachusetts General Law (MGL) c. 131 s. 40 and its implementing regulations, 310 Code of Massachusetts Regulations (CMR) 10.00. By definition, a barrier beach consists of two additional protected resource areas, Coastal Dune and Coastal Beach. As such, all activities that occur on a barrier beach fall under jurisdiction of the WPA. In addition, the barrier beach is protected under a local city ordinance—the City of Newburyport Wetlands Ordinance, adopted in 2001 and revised in 2005 (see Appendix C).

The purpose of the Newburyport Beach Management Plan presented herein is to identify issues pertaining to existing resource areas and to establish guidelines for coastal resource protection through appropriate management practices, in order to establish a framework in which the City of Newburyport can conduct sustainable recreation planning, facility improvements and maintenance activities. The primary goal for developing a beach management plan is to allow for the public to pursue recreational opportunities and environmental education in a safe and enjoyable environment, while instituting protection of the existing dune and beach system, wildlife habitat and other important ecological features which are an integral part of these

coastal resources located within the City of Newburyport. The plan includes recommendations for achieving these goals; however, all recommendations within the plan are subject to the City obtaining funding and/or assistance from various volunteer groups.

A. Implementation of Plan Recommendations

This plan outlines current conditions and practices and sets forth recommendations to improve protection of the barrier beach. In order to implement these recommendations, the City of Newburyport will take steps to ensure that this plan becomes a working document with staff appointed to oversee its success.

The City is in the process of forming a Beach Management Committee, made up of representatives from several City departments. The committee's charter will be to implement the Beach Management Plan. City departments that are being asked to participate are the Department of Public Services (DPS), the Harbormaster, Public Safety (Police or Fire), the Planning Office, the Conservation Administrator and the Mayor's Office. In addition, a representative from the Massachusetts Department of Conservation and Recreation (DCR) and a Newburyport resident who belongs to the Plum Island Tax Payer's Association (PITA), a volunteer group on Plum Island, will also be invited to participate.

The Beach Management Committee will undertake the implementation of this plan through the prioritization of recommendations; the creation of project plans for priority projects with timelines; and the pursuit of funding for projects. Ideally, the City will employ someone on a part-time basis to coordinate the activities of this group and help manage projects resulting from this plan; however, this is dependent on funding or securing grant money, as are some of the recommendations put forth in this document.

II. ENVIRONMENTAL REGULATIONS

Numerous local, state and federal statutes and regulations exist to protect barrier beaches and regulate activities within these areas. The following is a listing of the most significant environmental statutes and regulations that apply to activities at Plum Island Beach in the City of Newburyport, presented in accordance with the regulatory agency that oversees them.

A. MA Wetlands Protection Act (WPA) (MGL c. 131. s. 40)

The WPA and its implementing regulations (310 CMR 10.00), are the most significant laws and regulations in terms of use and applicability for the protection of important natural resource areas found on barrier beaches and the activities which occur in these areas.

The WPA also outlines performance standards for the alteration of rare wetland wildlife habitat. Any project under jurisdiction of the WPA and within “Estimated Habitat of Rare Species” is required to submit a copy of a Notice of Intent to the Natural Heritage and Endangered Species Program (NHESP).

Plum Island in the City of Newburyport consists of coastal wetland environments that are subject to the jurisdiction of the WPA and its implementing regulations. The City of Newburyport Conservation Commission (NCC) is the regulatory body responsible for the implementation of the WPA in the City of Newburyport. Their jurisdiction encompasses any activity proposed or undertaken within a wetland resource area or within 100 feet of a wetland resource that will remove, fill, dredge or alter a resource area. The NCC consists of a seven member board appointed by the Mayor. The City of Newburyport Conservation Administrator serves as staff to the NCC and provides the day-to-day administration of the wetland regulations. Guidelines specific to Plum Island have been developed to assist applicants who wish to file with the NCC (see Appendix D).

B. Additional Regulations

Other local, state and federal laws and regulations may also apply to proposed work within the barrier beach. These are listed below and further described in Appendix E:

1. Local

City of Newburyport

- City of Newburyport Wetlands Protection Ordinance (overview and appeal authority of Conservation Commission decisions); administered by and with an initial filing with the NCC.
- Newburyport City Zoning Ordinance:
 - *Plum Island Overlay District*. Governs the lot size and setbacks for single-family dwellings on Plum Island.
 - *Agricultural/Conservation District*. Waterfront areas on Plum Island are designated as Ag/Con zoning district. The zoning regulations govern use, minimum lot size, house size and frontage.

2. State

Department of Environmental Protection (MassDEP), Wetlands and Waterways Program

- Massachusetts Wetlands Protection Act (overview and appeal authority of Conservation Commission decisions); administered by and with an initial filing with the NCC.
- State Building Code (780 CMR, including Section 5323 and Appendix 120.G)

MA Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program

- Massachusetts Endangered Species Act (MESA) (MGL c.131A) and regulations (321 CMR 10.00): contains prohibitions against “taking” of a state-listed species; MESA review process required for projects within Priority Habitat for State-Protected Species. The review guidelines explain which projects require MESA filings and also include specific exemptions for certain activities. All projects within Priority Habitat for State-Protected Species should consult the MESA review process guidelines.

Executive Office of Energy and Environmental Affairs

- Massachusetts Environmental Policy Act (MEPA) (MGL c. 30 s.61-62H) and regulations (301 CMR 11.00)
- Coastal Zone Management Act (MGL c.21As.4A) and regulations (301 CMR 20.00)

3. Federal

U.S. Fish & Wildlife Service (USFWS)

- Federal Endangered Species Act (16 U.S.C. 1451, et. seq.)

U.S. Army Corps of Engineers (USACE)

- Clean Water Act, Section 404 (33 U.S.C. 1251, et. seq.)
- Rivers and Harbors Act of 1899 (33 U.S.C. 401, et. seq.)

Others

- Coastal Barrier Resources Act (16 U.S.C. 1451, et. seq.)
- National Flood Insurance Act (42 U.S.C. 4001, et. seq.)
- Americans with Disabilities Act (42 U.S.C. 12101, et. seq.)

III. PUBLIC USE, ACCESS AND SAFETY

Public use of Newburyport public beaches occur throughout the entire beach area. The current activities associated with public use, access and safety are described in detail below.

A. Public Use

1. Public Facilities

Pursuant to wetlands protection regulations, as well as coastal zone regulations which encourage public beach access in identifiable Rights of Way (ROW), public facilities will ensure proper use of the public beach environment and also will maintain the vital balance of protection of the primary dunes and dune grass from being adversely impacted by pedestrian access.

The primary location of public facilities is at the northern tip of Plum Island, locally known as “The Point.” The Point consists of a public parking lot, restrooms, a ticket booth and the Jason Sawyer Playground (see Figure 3). Construction of new public restrooms at the Point has been recently completed. The facilities are in compliance with federal, state and local regulations to ensure protection of coastal wetlands. In addition to the new public restrooms, the existing ticket booth was replaced in Spring 2009. The new booth is an 8 foot by 8 foot, pre-constructed, portable shed that can be moved and protected from storm damage during the winter months.

Any proposed construction projects on the barrier beach must comply with the requirements of the Massachusetts WPA and its implementing regulations and the City of Newburyport Wetlands Ordinance and will be required to file of a Notice of Intent or a Request for Determination of Applicability. These projects may also require MESA review.

In addition, any new structure or rebuilding of existing structures in any Flood Hazard Areas (including A-Zones), Coastal High-Hazard Areas (including Velocity Zones (V-Zones)), and Coastal Dunes shall comply with the State Building Code (780 CMR, including Section 5323 and Appendix 120.G), which imposes special restrictions on the placement and construction of structures within these areas. These restrictions include that structures in Coastal High Hazard Areas be elevated on adequately anchored pilings or columns, so that the lowest portion of the structure is elevated at least 2 feet above the base flood elevation. The newly revised State Building Code (effective January 1, 2008) also regulates “Windborne Debris Protection” (780 CMR 5301). Flood zones are further discussed in Section IV.E.5 (Resource Area Management and Protection, Land Subject to Coastal Storm Flowage).

The WPA, the Newburyport Wetlands Ordinance and State Building Code will help insure that buildings are constructed adequately above surrounding dune elevations to limit collateral storm damage by minimizing storm debris, allow dune migration, minimize erosion of dunes during storms and other beneficial functions described above.

2. Public Recreation

Public recreation on a barrier beach includes a variety of activities, including swimming, beach walking, wildlife observation and bird watching, kite flying, and fishing.

If left unmanaged, large numbers of pedestrians can significantly impact barrier beach resources. Destruction of dune vegetation can lead to blow-outs and destruction of dunes, and impact wildlife habitat. Wetlands can

become compacted, and upper wrack line of the beach can be affected by the destruction of sand-binding plants there. Wildlife can be disturbed by human presence or adversely affected by visitor-generated garbage. Kites may be seen by nesting birds as potential predators, causing them to abandon nests temporarily and put vulnerable young birds at risk. Wildlife and birds can become entangled in discarded kite string, and be seriously injured or die as a result. Vegetation as well as dune form and function can be adversely affected by all of the pedestrian recreation activities noted above.

Other, more specific recreational activities are discussed in the following sections.

a. Hunting and Fishing

Hunting, while acceptable on some portions of Plum Island under existing regulations established by the Mass. Division of Fishing and Wildlife, would nevertheless pose major safety problems on populated beaches on the Newburyport portion of Plum Island and is not permitted there.

Fishing on a populated beach could also pose a safety problem if not separated from recreational swimming areas during hours of active beach use. At present, Newburyport does not restrict fishing to a specific time or location on the beach; however, fishing (and other sporting activities) can be discontinued at the demand of a lifeguard or police officer (City Ordinance: c. 4, a. III, s. 4-101(d)) for public safety purposes.

In addition, discarded fishing gear poses a threat to wildlife. Wildlife (fish, birds, mammals and reptiles) can become entangled in fishing line which can result in injury or death. Waterfowl may ingest discarded fishing sinkers, which are especially harmful if they contain lead. Birds or other untargeted species may become hooked by fishing gear. Providing special units to recycle or dispose of fishing gear and erecting public signage to educate the public on these hazards can be employed – especially at the Point where fishing is a popular activity.

b. Camping and Fires

Camping or making fires on the beach can cause degradation of the beach environment. Tenting and fires may impact vegetation or landforms. They can destroy vegetated cover as well as alter dune form and function; they can impact rare species and their habitat, and can disturb activities of migratory shorebirds. Fires can impact dune fencing and signage through using them as combustion material. Fires can also create a public safety threat and debris problem through improper or careless disposal.

The City of Newburyport prohibits starting or maintaining any fire except those that are for the purpose of cooking by a person 18 years of age or older, provided state regulations are followed (527 CMR 10.22(3)). Cooking fires must be located upon sandy or gravelly land, free from living or dead vegetation or upon sandy or rocky beaches bordering tidewater. (The Newburyport Fire Department does not issue specific permits for fires.)

In addition, the City prohibits any person from camping, tenting, or sleeping on any part of the beach and prohibits the use of trailers for camping, tenting or living quarters (City Ordinance: c. 4, a. III, s. 4-101(b)).

c. Fireworks

Landing of fireworks on the barrier beach can result in quick-moving fires, which can destroy vegetation holding dunes in place. Fireworks can also cause serious disturbance to rare species and wildlife habitat. Launching and large-scale viewing of fireworks should be prohibited on coastal dunes and salt marshes, and especially near wildlife habitat, particularly that of nesting rare species.

Fireworks are prohibited by Massachusetts law except for large public displays permitted and regulated by municipal authorities.

d. Off-Road Vehicles and Horseback Riding

The use of vehicles and horseback riding on barrier beaches may destroy beach vegetation and destabilize the dunes. Coastal beaches may be affected by the churning of tires; tidal flats may be compacted. Use of vehicles and horseback riding can contribute to erosion of dune form and function. They can also degrade habitat of rare species.

While horseback riding is not prohibited on the beach per the City Ordinance, it is generally not done. It is recommended, however that if horseback riding on the beach occurs in the future, that it be limited to non-dune areas and away from designated Piping Plover nesting sites and that these restrictions be publicly posted.

With regard to off-road vehicles, the City Ordinance (c. 4, a. III, s. 4-101(c)) states that no person shall operate or use any motor vehicle or motorized bicycle on any part of the beach, except for authorized emergency vehicles or for the placement of docking and boating equipment for the safety of passengers embarking or disembarking boats commercially operated for fishing parties.

e. Pets

Pedestrians engage in a wide variety of activities on a barrier beach, including walking with pets on the beach. However, large, concentrated volumes of pedestrians with pets can have impacts on dune vegetation, wetlands, upper wrack line, wildlife and public health. Garbage and animal waste can have an adverse affect on beaches, water quality and tidal flats. Uncontrolled pets can harass wildlife and may cause a disturbance to other beach goers.

Dogs are *not* allowed at all on the public beach from May 15 through September 15 of each year per the City Ordinance (c.4, a. III, s. 4-101(e)). They are allowed at other times provided they are leashed. However, in reality, dogs are often allowed to run unleashed which can result in adverse impacts as noted above.

The existing land management agreement between DCR and the City of Newburyport states that the City must follow DCR park rules and regulations. DCR will be changing these rules in the near future which could affect the time period in which dogs are allowed on the beach, in order to more closely adhere to piping plover management guidelines. The Natural Heritage & Endangered Species Program under the Division of Fisheries & Wildlife recommends that the start date for banning dogs from beach be changed from May 15 to April 1. Any signage which will be created for the beach will reflect these changes.

Although pet owners may be fined for bringing their dogs on the beach from May 15 through September 15 or letting them run unleashed at other times, it is rarely enforced and is unlikely to deter these activities. It is recommended that the City engage in public outreach and education that would explain why certain restrictions are in place (e.g., public health, the preservation of wildlife habitat). Outreach could be in the form of signage, mailings, or other methods (see Section VII, Public Outreach and Education). In addition, it is recommended that the City amend the City Ordinance to ban dogs from the public beach from April 1 to September 15 of any year in order to avoid disturbance of nesting Piping Plovers and increase the fines for violation of this regulation from \$25 to at least \$50.

f. Watercraft

Barrier beach resources impacted by watercraft include: beaches, salt marsh, land containing shellfish, and land under the ocean. Coastal dunes may be impacted by pedestrians associated with vessel use. Vessel access at barrier beaches may conflict with recreational swimming. It may also conflict with rare species and wildlife habitat protection, especially at remote ends of barrier spits. Changes in bottom topography, alteration of substrate vegetation, and increased sedimentation due to prop wash and hull impacts may also occur. Motorized watercraft can create boat wakes which erode the shoreline. Increased access on barrier beaches or barrier spits can create a large human disturbance factor to areas otherwise inaccessible to most people but commonly used as nesting, feeding, resting and migration habitat for rare species and other wildlife.

The impacts of watercraft can also directly or indirectly impact the beach. Impacts are not likely to occur from minimal or occasional use of watercraft. It is the continued impact that needs to be evaluated and subsequently regulated. Often it is the impact of humans associated with watercraft activities that can have the largest negative impact on the barrier beach environment.

In order to properly manage vessel access to barrier beach and islands, beach managers (presently the Newburyport Harbormaster and his staff) are encouraged to work closely with other municipal harbormasters, the Massachusetts Harbormasters Association, the boating public, yacht clubs, the U.S. Coast Guard Auxiliary and the U.S. Power Squadron.

In addition, the Harbormaster is responsible for pump-out facilities (one at Cashman Park and one boat pump-out) for boaters. Although these facilities are not located directly on Plum Island, the use of pump-out facilities is important to preserving water quality in the vicinity of the island.

At present there are no public boat launches on the Newburyport section of Plum Island. There is, however, a private boat charter company (*Captain's Fishing Parties*) located the Point that offers fishing expeditions, sightseeing and whale watching cruises (all vessels are licensed by the Coast Guard). Another charter fishing company, *Obsessed Charters*, operates out of the same location as *Captain's*.

All management steps should be implemented to be consistent with the City of Newburyport Harbormaster. Watercraft use should be balanced with other uses through designation of special use areas. To accommodate migratory patterns of shorebirds such as terns and plovers, temporary restrictions on the launching and beaching of small craft should be implemented.

B. Public Access

1. General

Public beach access should, and needs to, be provided. However, both foot and vehicle traffic can result in degradation of the barrier dune and damage to the beach vegetation. Access ways need to be provided which will not only assure safe access to pedestrians and authorized vehicles, but also reduce or minimize impacts to the beaches, dunes and wildlife.

In 2006, a plan was prepared for DCR on public access at Plum Island entitled "*Plum Island Public Access Plan*." This document catalogs all existing Rights of Way (ROWs) and points of access (authorized and unauthorized) along Plum Island and offers recommendations as to how to best preserve the dunes and beach vegetation, while allowing public access to the beach. Although the City was not involved in the creation, review or approval of this plan, it will serve as a useful tool for planning future improvements of public

access to the beach. It is recommended that the City revisit the portion of this plan that applies to the City, revise it as necessary and then create an action plan to improve public access. Though many of the access ways described by the DCR document are outside of the physical limits of the Newburyport Beach Management Plan, the goals and objectives for minimizing impact to beach resources and providing improved public access to the water are consistent with the Newburyport Beach Management Plan. A copy of the 2006 DCR plan is presented in Appendix F.

An aspect of planning and managing public access ways that needs to be addressed (and was not included in the 2006 DCR plan) is the potential effect on rare and endangered plants and wildlife. For example, when assessing a public access way, the surrounding dune areas should be surveyed for rare plants by a qualified botanist. Potential effects on wildlife, especially on rare or endangered species as designated by the Natural Heritage and Endangered Species Program (NHESP) under the Massachusetts Department of Fish and Game, should be considered as well.

Many of the existing public ROWs and access ways to the beach are unmarked and have not been maintained. Consequently, some of these points of access have been encroached upon by abutters. Figure 4 shows the locations and provides a description of the use and types of public access ways/ROWs that exist within the limit of the Beach Management Plan. The following sections presented below describe pedestrian and vehicular access that is currently utilized at Plum Island along with a description of the current maintenance practices implemented by the City for these established ROWs and other points of public access.

2. Pedestrian Access

Currently, pedestrian access exists through a number of ROWs located at the ends of streets-running perpendicular to the beach, a number of footpaths located off of Grant Street, along Reservation Terrace and at the Point, and the elevated boardwalk at the Point. Many of the existing footpaths run through vegetated areas are not maintained by the City, but are likely to continue to exist due to pedestrian foot traffic. On-grade “Mobi-Mats” have been placed over the dunes at the ends of 53rd, 55th and 57th streets by volunteers from the Plum Island Taxpayers Association (PITA). The mats do not belong to the City and are on loan from PITA. Presently they remain in place all-year round, with the exception of the end sections, which are rolled up in the winter and then rolled out again in the spring (see Figure 4).

All existing ROWs and access points must be assessed for possible adverse effects on dunes, vegetation and wildlife habitat and to determine how to best remedy these impacts. As part of this assessment, the City will consider the installation of elevation boardwalks, on-grade mats and the use of snow fencing to delineate footpaths as described below.

a. Boardwalks and Walkover Design

In regard to boardwalks or wooden walkovers, these will be designed according to the standards presented in Appendix G: “Standards for Boardwalk and Walkover Construction” in order to have the least impact on the coastal dune and lessen any impact from storm damage. For example, a raised boardwalk must allow for the free movement of sediment and water through the dune. It must also allow for native vegetation, especially beach grass, to grow up to and under the boardwalk.

Access to a boardwalk should begin as far back as possible from the beach and dune. Snow fencing, symbolic fencing, a railing, or a vegetative barrier must funnel beach goers to the boardwalk and restrict pedestrian traffic to the boardwalk. In addition, any modified walkways are required to be ADA compliant.

b. On-Grade Mats

On-grade walkways, consisting of a plastic “Mobi-Mat” or wooden slat roll-out mats, are intended to be seasonal and temporary and can readily conform to existing dune topography, thus accommodating natural changes within the dune system. They can be utilized for pedestrian foot traffic as well as to provide a stable travel surface for vehicles that need to access to/from the beach. Placement of on-grade mats will be on designated locations, especially where emergency and public safety vehicles must pass to minimize degradation. Mats will be required to be inspected periodically and raised at the appropriate times to allow for the accretion of sediment and the growth of vegetation. The mats must be removed and stored during the winter months and reinstalled each spring. The City or PITA does not currently remove the mats during the winter months. As part of this Plan, the City or PITA will be required to remove the mats at the end of the summer beach season. A storage location will be identified for mat storage.

Placement of any new on-grade mats may require some grading to achieve a smooth, even surface. Any grading shall be performed with hand-rakes – no machinery shall be used. No sand shall be removed from the dune system as part of the grading process. If winter storms result in overwash or scarping of dunes where mats are to be placed, then pathways will be re-graded by hand and, if necessary, sand (i.e., sediment of an appropriate grain size) will be added before replacing the mats in the spring. If machinery is required for grading, a separate Notice of Intent will be filed for the proposed work.

c. Snow Fencing and Other Barriers

Snow (or sand) fencing is often installed to help build dunes since they trap windblown, and it can also be utilized to delineate the boundaries of sand pathways and prevent straying of pedestrian traffic into sensitive dune areas. At present, the Newburyport Department of Public Services (DPS) does not maintain any snow fencing on Plum Island.

Symbolic fencing, consisting of stakes and some type of tape or roping, is generally used to designate areas that are off limits to the public (e.g., sensitive dune areas or wildlife nesting sites). Newburyport DPS does not presently install or maintain symbolic fencing. The US Fish & Wildlife Service at the Parker River National Wildlife Refuge (PRNWR) has installed symbolic fencing in the past to cordon off Piping Plover nesting sites (see Section V, Rare Species and Wildlife Management).

3. Vehicular Access

Vehicular access to the beach is allowed throughout the beach by authorized vehicle only. Vehicles authorized to use existing access ways include those used for emergency response, lifeguards and beach maintenance by the Newburyport DPS. Access by beach maintenance and lifeguard vehicles occur only at the north end of the island through the existing parking lot and then via a wide sand pathway (see Figure 4). Authorized vehicles which access the beach are listed in Table 1 below.

Table 1: Authorized Vehicles for Beach Access

<i>Purpose</i>	<i>Vehicles</i>
Lifeguard equipment	1 ATV with trailer
Beach Cleaning	1 Ford tractor with rake*
Police	1 ATV for patrolling beaches 1 Van (for emergency use)

**City may share equipment with the Town of Newbury or use their rake, based on availability and condition of equipment, etc.*

The police keep one vehicle (a van) at the Point for emergency use but it is not intended for use directly on the beach. In addition, Newburyport DPS uses one-ton dump trucks to empty the twelve (12) trash barrels that are located in the parking lot at the Point during summer months, 7 days a week. No trash barrels are located on the beach.

4. Maintenance of Public Facilities and Access Ways

The primary public access way to the beach is at the northern tip of Plum Island (the Point). A public parking lot (parking fees are collected in summer), public restrooms and a small playground are located here. Newburyport DPS sweeps and plows within the parking lot area and maintains the pavement but performs no other maintenance at this location. Sweepings are taken off the island to the Fulton Pit in Newburyport. The playground is maintained by the Newburyport Parks Commission.

Newburyport DPS is responsible for maintenance of the elevated boardwalk that was constructed in 2005-2006; however, no repair/maintenance has been required to-date. Newburyport DPS does not currently maintain any of the existing pathways or established ROWs shown in Figure 4. Existing footpaths remain unvegetated due to heavy pedestrian traffic that occurs both during the summer season and throughout the winter.

Maintenance plans/schedules will be developed for each type of public access way (i.e., elevated boardwalk, on-grade mat, sand path, etc.). As part of the effort to assess all access ways, maintenance plans will be identified for each type.

C. Public Safety

The Newburyport Code of Ordinances (c. 4, a. III, s. 4-101) includes rules and regulations regarding the use of the beach on Plum Island. Restricted or prohibited activities related to public safety include a ban on open fires; prohibition of any motorized vehicles on the beach with the exception of emergency vehicles; and restrictions on sporting activities (surfing, fishing, etc.) which must be discontinued if instructed by a lifeguard or police officer for the purpose of public safety.

1. Lifeguards

Newburyport employs several lifeguards at three separate stations during the summer season. All lifeguarding activities are managed by the Newburyport Harbormaster.

Typically, lifeguards are on duty from mid-June through Labor Day. Lifeguards work from 10:00 a.m. to 5:00 p.m. during the beach season. On weekends, two lifeguards are assigned to each station with one “floating” lifeguard who is available to relieve others on duty as necessary. The lifeguard stations are located at 55th Street (Station #1), near the south jetty (Station #2), and at Plum Island Point (Station #4). It is noted that Station #3 no longer exists. Equipment is brought in daily through the access path adjacent to the boardwalk on an ATV and is then driven down the beach to station #2 for convenient access to the other two stations.

Although the primary responsibility of the lifeguards is to respond to emergency events, they also take measures to prevent accidents, such as enforcing the ban of flotation devices in the water or interrupting unsafe behavior on the beach. Lifeguards do not, however, have the authority to issue a citation to beach visitors who break city ordinances.

2. Emergency Response

The number of emergency responses at Newburyport's beaches on Plum Island is driven by surf conditions and rip tides. If the water becomes too treacherous for swimming, signs are posted indicating that the beach is closed. In the case of an emergency, lifeguards are equipped with rescue boards, back boards and first aid kits. They also use radios which are on the same frequency as the Newburyport Fire Department, and in the case of an emergency, the Fire Department is immediately notified as well as the Harbor Patrol. The Fire Department decides how to proceed based on the type of emergency, although the Harbor Patrol is often the first to respond via boat because they are often in the vicinity. In addition, lifeguards check in with the Fire Department via radio each morning when they start duty and log in and out when they depart/return to their post.

3. Beach Patrols

Police patrol the beach during the summer months (Memorial Day through Labor Day) in an ATV. The purpose for this patrolling is for additional public safety and to deter activities on the beach such as illegal consumption of alcoholic beverages. Rescue equipment is kept on the ATV for emergencies. Police also patrol the public areas at the Point at night, mostly to deter vandalism. Police access the beach through an unpaved sand path from the parking lot (see Figure 4, public access way #5).

In addition, the police keep a van at the Point for emergency use. The vehicle is not intended for use on the beach, but to transport people from the beach parking lot in case of an emergency.

4. Water Quality Testing

The Newburyport Board of Health department is responsible for performing water quality testing during the summer months if it receives funding from the State Department of Public Health. Water samples are collected at four locations (two on the Merrimack River and two on the Ocean) on a bi-weekly basis and are tested for Enterococci. Test results can be found on the Massachusetts Department of Public Health website at: <http://mass.digitalhealthdepartment.com>. All samples from the 2008 season were at or under the bacterial standard level for Enterococcus.

D. Summary of Public Use, Access Ways and Safety Recommendations

Access ways to the beach are not presently maintained by the City, with the exception of the elevated boardwalk located at Plum Island Point. The City will assess current pathways, especially those that cross steeper dunes (e.g., at 55th Street) to determine appropriate maintenance/improvement needs or if the access should be closed to prevent further erosion of the dunes and impacts to vegetation and wildlife.

In addition, all City employees using ATVs (lifeguards, police), or any staff performing spring cleanup activities, will attend annual training provided by the Parker River National Wildlife Refuge (PRNWR) to avoid disturbance of nesting birds. (See Appendix I)

The management recommendations presented below are for the entire public beach area on Plum Island in Newburyport, unless otherwise specifically noted. As stated earlier, the City will implement these recommendations based on the prioritization set by the Newburyport Beach Management Committee.

Public Access Ways

1. Verify existing public Rights of Ways (ROWs) to the beach, using the 2006 "Plum Island Access Plan" as a guide using deed records or available plan information.

2. Assess existing public ROWs and other points of established public access to determine if their current use is having an adverse effect on the dune system or on wildlife habitat. Establish a plan for closure, as applicable. For those ROWs and public access ways that the City determines should remain open, evaluate the most appropriate base for each access way (e.g., on-grade walkway, elevated boardwalk, sand pathway with snow fencing, etc.) and create an implementation plan.*
3. Create maintenance plans/schedules for each type of path implemented under Task 2 above (i.e., elevated boardwalk, on-grade mat, sand path, etc.) to include sweeping, inspections after major storms and removal of on-grade mats during winter months.*
4. Designate a location to store on-grade mats during winter months.*
5. Identify and clearly mark each ROW/access way with appropriate signage.
6. Designate a City department (or departments) to oversee and maintain the public ROWs/access ways.
7. Clearly demarcate (by signage) the access ways that are used by lifeguard and police vehicles.
8. Perform periodic inspections of access ways used by authorized vehicles (seasonally and after major storms) to determine if maintenance is required (raking, or additional nourishment in the way of additional beach-grade sediments). Any nourishment needed for the access ways shall come from stockpiled sand or a clean, compatible, off-site source.*
9. Conduct periodic inspections of all access ways to ensure that safe passage to/from the beach area is maintained. If safe access is compromised at any designated public access way locations, the City will take action (such as roping off unsafe areas) to divert pedestrian/vehicular access until it can be restored.*
10. The City may temporarily block off existing public access ways during/after storm events as a matter of public safety.
11. The City will clear sand from designated public access ways, where appropriate and as necessary, to maintain their function, and keep sand within the immediate area, either in the dune or on the beach, wherever it is most beneficial. Maintenance of these access ways will be primarily conducted by sweeping. Sand will be swept, by manual methods, to the sides or towards the entryway where pedestrian traffic is the greatest using manual methods.*
12. Elevated boardwalks that become buried will remain buried. The City will not remove sand, but rather, will smooth it out (by hand) within the designated boundaries of the access way, matching existing surrounding grades. New elevated boardwalk structures will be built over the buried structures as funds become available. Any components of the existing boardwalk that are partially buried, damaged or broken will be removed to ensure public safety. All new elevated boardwalk structures will be constructed at an appropriate elevation to minimize/avoid impacts to naturally migrating sand and in accordance with the "City of Newburyport Standards for Boardwalk and Walkover Construction (see Appendix G). Written notification will be submitted to the Conservation Commission a minimum of 2 weeks prior to the installation of replacement boardwalks.
13. Should the City wish to install any new vehicular access ways for the purpose of emergency response or maintenance, an NOI will be required. Any new access ways for vehicles shall at least be minimized in width and length to the extent practical. Access will be designed to be maintained over existing dune elevations, rather than creating/maintaining access at a lower grade than adjacent dunes to minimize impacts from erosion over time.
14. Engage public volunteer groups (e.g., the Plum Island Taxpayers Association) to help the City monitor and maintain ROWs/access ways.

**Minimum required activities or practices by the City of Newburyport.*

Other Recommendations:

15. Continue current maintenance practices for the parking lot and public buildings (restrooms and ticket booth) located at Plum Island Point.
16. Continue the ban on hunting on the beach.
17. Continue the ban on the use of any motor vehicle or motorized vehicles on the beach, with the exception of authorized emergency vehicles and motorized equipment located at Plum Island Point for the placement of docking and boating equipment (City Ordinance, c. 4, a. III, s. 4-101(c)).
18. Change time period in the City Ordinance during which dogs are banned from the beach (from May 15 to April 1) in order to protect nesting Piping Plovers. Also increase fines for violation of this regulation from \$25.00 to at least \$50.00.
19. Erect signage and notify the public of the requirements regarding dogs on the beach. Include rules (per City Ordinance) to pick up and carry out animal waste generated by their pets and the ban against dogs on the Beach, clearly stating the penalties (fines) for failure to comply.
Signage should include educational messages as to why it is important to pick up animal waste—for both health and water quality reasons. Also state the leash requirements for dogs for off-season times and why it is important (protection of wildlife habitat, prevention of dune and vegetation destruction, etc.) See City Ordinances c. 3, a. I, s. 3-2; c. 4, a. II, s. 4-101(e) and c. 3, a. II, s. 3-26.
20. Provide biodegradable bags at beach access points for owners to collect and transport animal waste. Provide waste receptacles at beach in off-season with weekly pickup. Recommend participation of dog-owners in Plum Island to provide bags and trash receptacles.
21. Provide units for recycling fishing gear (fishing line, etc.).
22. Erect signage educating the public as to the potential danger of fishing gear to wildlife.
23. As part of public education signage, include a message that everything that is carried onto the beach must be carried out.
24. Construction activities associated with major city facilities improvements will continue to require a separate application (Notice of Intent or Request for Determination) to be filed with the Conservation Commission and MassDEP.
25. Continue to implement all watercraft management steps in cooperation with the City of Newburyport Harbormaster.
26. Determine if special use areas for swimming, surfing, and fishing should be adopted (for safety purposes). If so, this could be managed by educational signage, emphasizing the rules of beach etiquette between swimmers, surfers, anglers, etc.
27. Monitor and manage, if necessary, the impact of human activities to minimize the impact to the dunes, beach and salt marsh areas and resident wildlife.
28. Designate and mark areas of special conditions with buoys and signage, as appropriate.
29. Install symbolic and/or snow fencing and signage for onshore areas where human activities affect wildlife or fragile resource areas (dunes, beach grass, salt marsh, Piping Plover habitat, etc).

IV. RESOURCE AREA MANAGEMENT AND PROTECTION

A. General Description

As discussed previously, resource areas that exist at Plum Island Beach in the City of Newburyport, as defined under the WPA and its implementing regulations (310 CMR 10.00), include Barrier Beach, Coastal Beach, Coastal Dune, Riverfront Area and Land Subject to Coastal Storm Flowage (see Figures 5 and 8). The City's management of the beach strives to balance protection of the island's sensitive natural resources with the need to provide safe and enjoyable public recreational opportunities.

This section identifies and describes the resource areas on Newburyport's section of Plum Island that are under the jurisdiction of the WPA, the Newburyport Wetlands Ordinance and the most significant resource protection issues. This includes a description of the existing conditions of the Newburyport beach-dune system, as well as stabilization and protection measures which are utilized within resource areas.

These issues will also be an integral component of the City's environmental education and outreach programs. Much of this information presented herein is also provided in the report "*Guidelines for Barrier Beach Management in Massachusetts* (MA Barrier Beach Task Force (MBBTF) 1994).

Within each of the Resource Areas discussed below, the WPA provides protection for "Estimated Habitats of Rare Wildlife" which may fall within these areas, requiring review of applications by NHESP. The issuing authority (typically the Conservation Commission) determines if the project could adversely affect any rare or endangered species, based on comments issued from NHESP. 310 CMR 10.37 states:

"Notwithstanding 310 CMR 10.24(7) and 10.25 and 310 CMR 10.27 through 10.35, if a proposed project is found by the issuing authority to alter a resource area which is part of the habitat of a state-listed species, such project shall not be permitted to have any short or long term adverse effects on the habitat of the local population of that species. A determination of whether or not a proposed project will have such an adverse effect shall be made by the issuing authority. However, a written opinion of the Program on whether or not a proposed project will have such an adverse effect shall be presumed by the issuing authority to be correct. This presumption is rebuttable and may be overcome upon a clear showing to the contrary."

Since there are designated Estimated Habitats on Plum Island, preservation of rare and endangered species (e.g., the Piping Plover) and their habitat is an important consideration in the management of the barrier beach.

B. Barrier Beach (310 CMR 10.29)

1. Definition

Barrier Beach means a narrow low-lying strip of land generally consisting of coastal beaches and coastal dunes extending roughly parallel to the trend of the coast. It is separated from the mainland by a narrow body of fresh, brackish or saline water or a marsh system. A barrier beach may be joined to the mainland at one or both ends. (310 CMR 10.29(2))

Plum Island is a barrier beach. This site has been assigned the unit code “Sb-1” as part of the Massachusetts Barrier Beach Inventory Project (MBBTF, 1994).

2. Functions

Barrier beaches, including all of their coastal dunes, are significant to the public interests of storm damage prevention, flood control, and protection of marine fisheries, wildlife habitat, and, where there are shellfish, land containing shellfish. “Significant” means that they play a role in protecting these public interests of the WPA.

3. Critical Characteristics

Since barrier beaches are composed of coastal beach and coastal dunes, the characteristics of a barrier beach that are critical to the protection of the public interests listed above are described below under the coastal beach and coastal dune subsections.

4. Performance Standards

When a barrier beach is significant to storm damage prevention, flood control, marine fisheries, or the protection of wildlife habitat, the following performance standards apply:

- All performance standards for coastal beach and coastal dunes.
- No project may be permitted which will have an adverse effect on state-listed rare vertebrate or invertebrate species (see subsection entitled Rare Species Habitat Protection later in this chapter for more information).

5. Additional Performance Standards per the Newburyport Wetlands Ordinance

The Newburyport Wetlands Ordinance offers additional protection to the barrier beach (Plum Island). In regard to building construction, the State Building Code was modified in January 2008 to address the issues of coastal storms and flooding. (See Appendix G of the 7th Edition of The Massachusetts Basic Building Code 780 CMR 120.G: Flood-Resistant Construction and Construction in Coastal Dunes to address structural damage.) In cases where the state building code is more stringent than the Newburyport Wetlands Ordinance, the building code will take precedence and vice-versa.

The performance standards from the Newburyport Wetlands Ordinance are, as follows:

- No development or redevelopment shall be permitted within a FEMA V-Zone or AO-Zone. Notwithstanding the foregoing, structures damaged or destroyed from fire, storm, or similar disaster may be redeveloped/repared only in accordance with current local, state and federal regulatory standards when damage to or loss of the structure is equal to or greater than 50% of the market value of the building. When damage to or loss of the structure is less than 50% of the market value of the building, redevelopment/repairs may be allowed to return the structure to pre-damaged conditions. In all instances, reconstruction, renovation or repairs to damaged structures may be authorized as stated herein, provided that there is no increase in floor area.
- All new buildings or substantial improvements to existing buildings shall be built on open pilings and comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. All development and redevelopment shall comply with G.L. c. 131, sec. 40,

310 CMR 10.00 and Section 744 of the Massachusetts State Building Code Design Requirements for Floodplain and Coastal High Hazard Areas.

- For the purposes of this Ordinance, the term “substantial improvement” shall mean an improvement that increases the market value of the building by an amount equal to or greater than 50% or an improvement that increases the square footage by an amount equal to or greater than 25%.
- All new buildings, replacements, substantial improvements or expanded footprints less than 25% in square footage shall have their first floor built at least two feet above base flood elevation or the highest existing ground elevation whichever is higher.
- Electrical, heating, ventilation, plumbing and air conditioning and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- Development or redevelopment on or within 200 feet landward of the top of a coastal bank or dune shall have no adverse impact on the height, stability or function of the bank or dune to fulfill the purposes set forth in Section IB.
- In areas where there are coastal banks or primary or frontal dunes, all new buildings and structures shall be set back from the beach dune interface at a distance equal to thirty times the average yearly historical erosion as shown by the most current CZM shoreline change map.
- No activity shall increase the elevation or velocity of flows in a floodplain.
- Within the FEMA V Zone, A Zone, or AO Zone or their equivalent, new or reconstructed structures or development on the barrier beach that alters vegetation, interrupts sediment supply and/or changes the form or volume of a dune or beach must comply with the specific performance standards in this Ordinance and in the regulations promulgated pursuant hereto.
- In all other areas of the Plum Island Barrier Beach outside of the V-Zone and AO-Zone, all new Buildings shall be built on open pilings and shall comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. All existing Buildings with Substantial Improvements, and all horizontal expansions of the existing footprint, shall be built on open pilings and shall comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. If a Licensed Engineer certifies that an existing portion of the solid foundation will not require modifications to support the proposed building (other than new pilings exterior to the existing footprint), the existing portion of the solid foundation may remain.

Notwithstanding the previous sentence, the existing solid foundation of a *Building* shall be replaced with pilings, if, 50% or more of the exterior walls have been removed, or are proposed to be removed, and a new roof will be construction, or is proposed to be constructed.

C. Coastal Beach (310 CMR 10.27)

1. Definition

Coastal Beach means unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal beaches extend from the mean low water line landward to the dune line, coastal bankline or the seaward edge of existing manmade structures, when these structures replace one of the above lines, whichever is closest to the ocean. (310 CMR 10.27(2))

Tidal flats are the nearly level part of a coastal beach, usually extending from the low water line landward to the more steeply sloping portion of the coastal beach. On the bayshore they may end at the salt marsh line.

The coastal beach resource area at Plum Island in City of Newburyport is located along the Atlantic Ocean and along the Merrimack River.

2. Functions

Coastal beaches, including their tidal flats, are significant to the public interests of storm damage prevention, flood control, and the protection of wildlife habitat. Where tidal flats are present, they are presumed significant to the protection of marine fisheries and, where there are shellfish, to land containing shellfish.

3. Critical Characteristics

The characteristics of a coastal beach that are critical to storm damage prevention and flood control are: the ability of the coastal beach to respond to wave action and the volume and form of the beach.

The characteristics critical to the protection of marine fisheries or wildlife habitat are: distribution of sediment grain size; water circulation; water quality; and relief and elevation.

4. Performance Standards

When a coastal beach is significant to storm damage prevention, flood control, marine fisheries or the protection of wildlife habitat, the following performance standards apply:

- Any project on a coastal beach (with a few exceptions described in the Wetlands Protection regulations) must not have an adverse effect by increasing erosion, decreasing the volume, or changing the form of any coastal beach or an adjacent or downdrift coastal beach.
- Any groin, jetty, solid pier, or other solid fill structure which will interfere with littoral drift, in addition to complying with the above must also be constructed as follows:
 - It shall be the minimum length and height demonstrated to be necessary to maintain beach form and volume. In evaluating necessity, coastal engineering, physical oceanographic and/or coastal geologic information shall be considered.
 - Immediately after construction any groin shall be filled to entrapment capacity in height and length with sediment of grain size compatible with that of the adjacent beach.
 - Jetties trapping littoral drift material shall contain a sand by-pass system to transfer sediments to the downdrift side of the inlet or shall be periodically re-dredged to provide beach nourishment to ensure that downdrift or adjacent beaches are not starved of sediments.

- Beach nourishment with clean sediment of a grain size compatible with that on the existing beach may be permitted.

When a tidal flat is significant to marine fisheries or the protection of wildlife habitat, the following performance standards apply:

- Water-dependent projects must be designed and constructed using the best available measures to minimize adverse effects.
- Non-water-dependent projects must have no adverse effect on marine fisheries or wildlife habitat caused by: alterations in water circulation; alterations in the distribution of sediment grain size; and changes in water quality, including, but not limited to, other than natural fluctuations in the levels of dissolved oxygen, temperature, or turbidity, or the addition of pollutants.
- No project may be permitted which will have an adverse effect on specified habitat sites of state-listed rare vertebrate or invertebrate species.

5. Existing Conditions of Coastal Beach

The beach extends approximately 4,200 linear feet from the Newburyport/Newbury city/town line at 51st Street), to the northern tip of Plum Island. The width of the beach from mean low water to the toe of the dune generally ranges from approximately 90 to 1,000 feet. Severe erosion has taken place along many parts of the Plum Island Coastal Beach.

6. Coastal Beach Management and Protection

The City conducts routine beach operation and management practices, which include:

- Trash removal
- Annual beach raking

a. Debris and Trash Removal

According to many sources, over 7 billion tons of waste impacts the oceans of the world annually. It is, therefore, not surprising to note that Plum Island Beach is one of those areas that can be seriously impacted by this problem. While our barrier beach is not normally subjected to many of the municipal and commercial abuses, litter can be a major issue. The discarding of litter, in particular cigarette butts, beverage containers, pet wastes, plastics, and other detritus by human visitors, can cause significant harm to our beach and its inhabitants (human and wildlife). A brief item description would include cigarettes and filters (most common), food wrappers and containers, balloons, glass bottles, cups, plates, forks, knives, spoons, caps, lids, aluminum cans, plastic bottles, straws, clothing, discarded food, bags, and many other items cast aside by those who visit and use Plum Island beaches. There is also a fair amount of debris and litter that washes in from “off-shore” sources. Fortunately, the state of Massachusetts has less beverage container litter than many other coastal states because of the bottle deposit laws.

Residual litter, even after the most successful of preventative programs, is a fact of life. Co-operative action in partnership with local conservation groups is still necessary to keep our beaches clean. Such organizations as Surfriders, Adopt-A-Beach, Massachusetts Coastal Zone Management and many others are useful not only as information sources, but they also conduct organized periodic beach clean-up events.

There are many opportunities to minimize littering, and to mitigate the impact of littering as well as clean up after the fact. Much of this can be accomplished through public outreach and education and will be discussed in further detail in Section VII. *Outreach and Education*.

b. Beach Cleaning

The purpose of raking the beach is to gather and dispose of wrack interspersed with debris that has accumulated during the winter months, along the entire length of the public beach. The Newburyport DPS cleans the beach using a 10-foot rake attached to a tractor. Newburyport DPS also manually collects large pieces of debris that have washed up on the beach during the winter. Collected debris will be placed into tractor bucket by hand-rake and pitchfork, whenever feasible.

At present, beach raking is performed once a year, typically in mid-May after the large debris has been removed. Currently, the raking takes place from the shoreline up to the vegetated areas of the dune but does not go beyond that point. All wrack is collected and disposed of and is not reused elsewhere on the beach. The large debris and wrack are taken off the island and disposed of at the Fulton Pit in the City. Should the City perform raking by mechanical means in the future, it will be done so with a set back at least 10-15 feet seaward from the toe of the dune.

c. Beach Maintenance

The only beach maintenance performed by the City, through its DPS division, is annual beach raking and manual removal of large debris as discussed in the above section.

d. Beach Nourishment

"Nourishment" refers to the placement of sand (and appropriately sized sediment) on a beach or barrier beach to increase its volume. The feasibility of nourishment should be evaluated in combination with modification to any existing erosion control structures. Beach nourishment using dredged and other off-site materials is a preferred alternative to hard structures and a positive step for storm damage prevention on barrier beaches.

Beach compatible sediment for nourishment may be obtained from several different sources and by different methods including, but not limited to: an offsite borrow source (i.e. clean, compatible material trucked in from off-island), surplus sediment from construction projects performed along the beach, sand swept from the parking lot and roads, or dredged sediment from navigation channels or other acceptable dredged sand material. Beach nourishment will likely need to be performed on a periodic basis, particularly if a source of natural sand no longer exists for a given beach area. Development of a beach nourishment program will require an understanding of erosion rates to identify the most critical beach areas, identification of suitable sand source(s) and the frequency and volume of sand necessary to maintain the beach. Storm frequency and magnitude can greatly affect how much and how often beach nourishment will be required.

Any sediment that is used for beach nourishment should be similar in size and color to that of the natural beach and should be appropriate for whatever purpose it is intended to serve (e.g., shore protection). DCR, in participation with CZM and the U.S. Army Corps of Engineers (USACE), will be moving ahead with a study of the Plum Island-Salisbury region in an effort to address the on-going beach and dune erosion on a long-term basis. As part of this study, the physical characteristics of beach sediments will be determined and provide a baseline for future beach nourishment projects. In addition, guidelines set forth in Mass DEP's "*Beach Nourishment: MA DEP's Guide to Best Management Practices for Projects in Massachusetts*" will be consulted for beach nourishment projects on Plum Island.

Since 1990, the USACE has been performing the maintenance dredging of the existing federal entrance channel located at the entrance of the Merrimack River and disposing of the sediments at nearshore sites located immediately offshore at Plum Island and Salisbury Beach (see Figure 6). Dredging and disposal of sediments at the Plum Island nearshore site occurred in 1990, 1991, 1993 and 1999, with the Salisbury Beach nearshore site being utilized in 1996. The nearshore disposal of dredge sediments provides an indirect beach nourishment source by natural means.

The USACE, DCR, the City of Newburyport and the Towns of Newbury and Salisbury are currently pursuing the use of dredge sediments from the upcoming Merrimack River Entrance Channel maintenance project for beach/dune nourishment. Approximately 160,000 cubic yards of dredge sediments are anticipated to be available to directly pump to Plum Island and Salisbury Beach. Pending funding and the permitting of this work, the nourishment is scheduled for the Fall of 2009. The Merrimack River Beach Alliance was established for local municipalities, Federal and State Agencies, and State and Federal Representatives to communicate and help coordinate this major undertaking.

The City of Newburyport will most likely not receive any of the dredge materials for beach/dune nourishment from the 2009 federal dredging project; however, the City may have an opportunity to receive dredge sediments from subsequent dredging efforts. All future dredging and beach/dune nourishment activities will require approval by local, state and federal regulatory agencies. The City's primary focus for future beach nourishment efforts will be concentrated on critical dune areas and those at the beach-dune interface.

D. Coastal Dunes (310 CMR 10.28 and the Newburyport Wetlands Ordinance, c. 6.5, a. II, s. 6.5-28)

1. Definition

Coastal Dune means any natural hill, mound or ridge of sediment landward of a coastal beach deposited by wind action or storm overwash. Coastal dune also means sediment deposited by artificial means and serving the purpose of storm damage prevention and flood control. (310 CMR 10.28 (2))

The coastal dune resource area at Plum Island is present along the entire length of the barrier beach. Under Newburyport's Wetland Ordinance, the whole of Plum Island is considered coastal dune.

2. Functions

Coastal dunes are significant to the public interests of storm damage prevention, flood control, and the protection of wildlife habitat. On barrier beaches, all coastal dunes are deemed significant to these public interests.

3. Critical Characteristics

The characteristics of coastal dunes that are critical to the protection of storm damage prevention, flood control, and wildlife habitat are: ability of the dunes to erode in response to the beach conditions; volume and form of the dunes; vegetative cover; ability of the dune to move landward or laterally; ability of the dune to continue serving as bird nesting habitat.

4. Performance Standards

When a coastal dune is significant to storm damage prevention, flood control, marine fisheries, or the protection of wildlife habitat, the following performance standards apply:

- Any alteration of, or structure on, a coastal dune or within 100 feet of a coastal dune shall not have an adverse effect on the coastal dune by: affecting the ability of waves to remove sand from the dune; disturbing the vegetative cover so as to destabilize the dune; causing any modification of the dune form that would increase the potential for storm or flood damage; interfering with the landward or lateral movement of the dune; causing removal of sand from the dune artificially; or interfering with mapped or otherwise identified bird nesting habitat.
- When a building already exists upon a coastal dune, a project accessory to the existing building such as a small shed or small parking area for residents may be permitted, provided that such work, using the best commercially available measures, minimizes the adverse effect on the coastal dune caused by the impacts listed above.
- The following projects may be permitted provided that they have no adverse effect on the coastal dune caused by the impacts listed above: pedestrian walkways, designed to minimize the disturbance to the vegetative cover and traditional bird nesting habitat; fencing and other devices designed to increase dune development, and to direct vehicular and pedestrian traffic; and plantings compatible with the natural vegetative cover.
- No project may be permitted which will have any adverse effect on the habitat of state-listed rare vertebrate or invertebrate species (see section later in this report entitled Rare Species and Wildlife Management for more information).

5. Existing Conditions of Coastal Dune

Severe erosion has taken place along many parts of the Coastal Dune, mostly on the southern portions of Plum Island in the Town of Newbury. The rate of dunal erosion varies along the length of Plum Island, with many areas experiencing 50 to 100 feet of dune retreat over the last 5 to 10 years.

Newburyport has experienced accretion of sand on the northern portion of Plum Island. There is, however, an area of the beach between 51st and 57th Streets (#30 55th Street) that is experiencing erosion which has prompted a private homeowner to place sandbags in front of this house. This sandbagging project is presently being monitored to determine the effectiveness of the bags as well as to evaluate any potential adverse end effects resulting from the sandbags. In April 2009, sand was added to the sandbagging followed by the planting of beach grass in order to stabilize the area. The Order of Conditions for this project requires that the following documentation be provided before the issuance of a Certificate of Compliance:

- A written post-construction report including observations made during the monitoring and inspection of the coir bags (after their installation). The report shall also detail any problems that occurred, if any, and any actions that occurred in order to remediate these problems.
- Post-construction photographs that include the staked or predetermined reference points (see Condition # 40) demonstrating compliance with this Order of Conditions.

6. Coastal Dune Management and Protection

Many of the City's natural resource management and protection measures at the beach focus on the dune area. Dunes are the key natural component in a barrier beach system, since these sandy formations are the major element of the barrier, which in most cases prevent damage to natural or developed areas behind the dunes.

Dune vegetation traps windblown sand, stabilizing the dunes and preventing the sand and other debris from covering developed portions of the property.

The primary functions of a barrier beach are storm damage protection, flood control and protection of wildlife habitat. Managing a barrier beach in order to preserve these important natural functions becomes increasingly necessary as development along the coast continues to increase and relative sea level continues to rise. The Plum Island Beach has experienced significant erosion which affects the ability of the beach to provide storm damage protection, flood control and protection of wildlife habitat. Beach management actions shall give priority to storm damage prevention, flood control, and wildlife habitat preservation.

a. Control of Pedestrian Access

Pedestrian access will be focused at the public access ways in order to keep pedestrian traffic off the fragile dune system. This is addressed in detail in Section III B.

b. Dune Maintenance

Currently, the City of Newburyport is not actively employing measures to maintain the existing dune system or encourage its growth by use of snow fencing and beach grass planting. Snow (or sand) fencing provides an appropriate means of building dunes for storm damage protection and flood control or maintaining a barrier beach system to manage blowing sand in and around built facilities and structures. Snow fences may be placed along foredunes or beach berms to trap and accrete sand. While snow fence installation allows sand to collect and help rebuild the dune, the dune can only be fully stabilized through the planting of vegetation. Dunes will not stay in place without vegetation and its associated root system. Beach grass or other native vegetation is, therefore, often planted in conjunction with snow fence to further facilitate the trapping of sand and stabilization of the dunes.

Snow fencing typically should consist of wood fencing with wood fence posts. The fencing should be about 50% open with open and closed areas no smaller than 5 centimeters wide. Sets of snow fence with posts are typically spaced at 10 to 15 foot intervals and be installed parallel to the beach and dune face and supplemented with additional installation of fencing to quickly build a dune.

Beach grass and other vegetative plantings should be made in designated areas for storm damage restoration and erosion control, especially in overwash areas in front of sections of developed barrier beach. Plantings should be American Beach Grass (*Ammophila breviligulata*) planted two to three culms to a depth of 8 inches, spaced 12-18 inches apart. Planting may be fertilized with slow-release fertilizer. Ideally, a natural seaweed or fish fertilizer or the addition of natural wrack will be used. These plantings should be made in conjunction with snow fence installation. Additional guidance on snow fence installation and beach grass planting is provided in Appendix H.

In some instances, the planting of beach grass or the installation of snow fencing can adversely affect Piping Plovers (especially nesting areas); therefore, proposed plans for installing either will be submitted to NHESP for review, pursuant to MESA and the rare species habitat provisions of the WPA.

In planning such restoration activities, care must be taken not to destroy rare species habitat by improperly planting in overwash fans and low relief foredune areas that may be utilized by sensitive species, such as Piping Plovers.

Whenever and wherever possible, the natural processes of beach and dune accretion and erosion should be allowed to occur. Beach and dune stabilization projects should not be undertaken that will alter and degrade wildlife habitat, particularly for rare species such as terns and plovers.

Signs, in addition to snow fencing and native vegetation plantings, should be placed at dune restoration sites to control pedestrian and vehicle traffic. Residents of Plum Island should be encouraged to engage in dune restoration activities through activities designed to increase awareness of the fragile nature of the barrier beach and by enforcement of the Wetland Regulations.

c. Dune Nourishment

Dune nourishment can be performed with the addition of outside material to the dunes. Several techniques for dune nourishment are recommended for the City. These techniques are described below.

1. Stockpiling Sand/Sediments for Nourishment

Stockpiled material would be used to fill voids within the beach dune system, on an emergency basis, or for non-emergency in the spring/summer season for the preparation of the dune prior to planting and fencing. Nourishment compatible sands and sediments could be placed within the sand stockpile areas (SSA) at the Plum Island Point parking lot or other approved areas to have in reserve for immediate placement for stabilizing eroded areas along the beach.

Beach and dune-quality sand to be placed at the SSA can be obtained from offsite borrow, surplus sand from construction projects performed along the beach, sand swept from the beach parking lot and roadways and from dredging projects. Sand sweepings will be sifted to remove debris. Sand for nourishment shall not be excavated from surrounding beaches or dunes for the purpose of filling the SSA. Stockpiled sand for nourishment should meet the physical characteristics of existing dune sediments as determined as part of the future DCR study that will be conducted (See Section IV.C.6.d).

Prior to stockpiling any material within the SSA, grain size analyses should be performed on a representative sample of the material and submitted to the City for approval. Sand for nourishment should be clean, granular, free from roots or other organic material, trash and frozen material and shall be capable of meeting the size requirements as specified. Sand material should also match the color of existing sediments as closely as possible, as approved by the City. If necessary, all stockpiled sand should be sifted to meet sand quality requirements for beach nourishment as needed. Inspection of the quality of the sand deposited should be made on an on-going basis in accordance with an appropriate permit.

Equipment to be used for placing the beach/dune nourishment sands will be in good condition with no leaks or spilling that could occur while the equipment is on the beach. Equipment anticipated for this activity include a, front-end loader, backhoe, and tracked excavator, tracked trucks and trucks with reduced pressure in the tires.

Most likely, the SSA will be managed by the Newburyport DPS, although it may be overseen through a joint effort by the proposed Newburyport Beach Committee. It is recommended that there be a plan for the SSA that outlines details, including:

- The minimum and maximum storage capacity of the SSA;
- How the use of the SSA will be regulated (including the filing of a Notice of Intent);

- How sand/sediments will be replenished, in order to maintain a stable supply; and
- Identification of sources of sediments (i.e., dredge materials, purchased from 3rd party, etc.).

2. Placement of dredged material from the Merrimack River

Dune nourishment can also be performed utilizing dredge sediments from the Merrimack River Federal Entrance Channel (See Section C.6.d. - Coastal Beach Management and Protection, Beach Nourishment).

E. Land Subject to Coastal Storm Flowage (310 CMR 10.04)

1. Definition

Land Subject to Coastal Storm Flowage (LSCSF) *means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater* (310 CMR 10.04). The areas mapped by the Federal Emergency Management Agency (FEMA) on community Flood Insurance Rate Maps (FIRM) as the 100-year flood plain within the coastal zone are included within LSCSF.

On Plum Island, these areas include (but may not be limited to) velocity zones (V-zones), overwash zones, and areas of still water flooding during the 100-year statistical storm (A-zones). LSCSF is an overlay resource area that includes other coastal wetland resource areas – Coastal Beach, Coastal Dune, and Salt Marsh. LSCSF does not have a buffer zone, nor does it have any performance standards.

The area between the primary frontal dune on Plum Island and offshore is considered a “Coastal High Hazard Area” and a V-zone since any structures located here are likely to incur damage during storms.

FEMA defines “Coastal High Hazard Area” as:

“an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The coastal high hazard area is identified as Zone V on Flood Insurance Rate Maps (FIRMs). Special floodplain management requirements apply in V Zones including the requirement that all buildings be elevated on piles or columns.”

The Newburyport Wetlands Ordinance prohibits development or redevelopment in a FEMA V or AO Zone except under special circumstances:

No development or redevelopment shall be permitted within a FEMA V-Zone or AO-Zone. Notwithstanding the foregoing, structures damaged or destroyed by fire, storm, or similar disaster may be redeveloped/repared only in accordance with the current local, state and federal regulatory standards when damage to or loss of the structure is equal to or greater than 50% of the market value of the building.

For all other FEMA flood zones, the ordinance requires that all new structures (or substantially improved structures) shall be raised on pilings. (See Appendix C)

2. Functions

Land Subject to Coastal Storm Flowage may be significant to the interests of storm damage prevention, flood control, pollution prevention and wildlife habitat.

3. Critical Characteristics

LSCSF contains other important resource areas, including Coastal Beach, Coastal Dune and Salt Marsh, which are important for storm damage prevention and flood control. The critical characteristics of each of these resource areas have been described in previous sections.

4. Performance Standards

There are currently no performance standards for work in LSCSF. However, Plum Island is defined as a Barrier Beach, consisting of Coastal Beach and Coastal Dune. LSCSF at Plum Island will fall within one of these two resource areas and is subject to all of its particular performance standards.

5. Existing Conditions of LSCSF

LSCSF on Plum Island extends to the edge of the 100-year flood plain. Some areas are in V-zones, which are those areas that FEMA has mapped as being likely to have at least a three-foot wave with velocity moving across the beach or dune surface during the 100-year storm. This includes the beach, much of the coastal dune and salt marsh, as well as parts of several developed areas.

The current FEMA maps for Newburyport were created in 1985 and are inaccurate with regard to flood zones on the barrier beach (see Figure 7a). As noted in the *Newburyport Plum Island Filing Guidelines* (last revised in 7/5/2004), the Conservation Commission has used what are known as the “CDM” maps, developed by Camp Dresser & McKee in 2002 and reviewed by the Massachusetts Department of Environmental Protection (Mass DEP). These maps include a delineation of LSCSF (A and AO Zones), the limit of Barrier Beach, Coastal High Hazard & Limit of Coastal Dune (V Zone), the Riverfront Boundary and the Primary Frontal Dune.

In 2007, FEMA supplied the City with maps of the barrier beach showing a new delineation of the primary frontal dune and a more accurate representation of the flood zones. These are now being used in place of the CDM maps to determine the extent of LSCSF for Conservation permits. Figure 7B displays one of these maps showing the primary front dune (red line).

New FEMA maps are in the process of being developed for Newburyport (and all of Essex County). The City will receive draft maps at the end of May 2009 with the first introductory meeting (hosted by FEMA and DEP) scheduled for June 16 in Newburyport. Final maps are expected to be approved and implemented in 2010. These will replace all previous maps for determining flood zones and the Primary Frontal Dune. (see Appendix L for FEMA Letter 07-01-0522P regarding the LIDAR mapping for primary dunes).

6. LSCSF Management and Protection

As stated previously above, LSCSF at Plum Island falls within either Coastal Beach or Coastal Dune. The performance standards for these resource areas would apply to any activity proposed within LSCSF in this area, as appropriate. Work may not increase coastal flooding by redirecting floodwaters or by decreasing the ability of resource areas to provide their natural storm damage protection functions. In addition, work on

structures within LSCSF must also comply with the recently revised regulations (January 2008) of the State Building Code (780 CMR 5323 and Appendix 120.G), as discussed in Section III, Environmental Regulations.

F. Riverfront Area (310 CMR 10.58)

1. Definition

A Riverfront Area is the area of land between a river's mean annual high water line and a parallel line measured horizontally outward from the river and a parallel line located 200 feet away. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone.

The northern portion of the Plum Island is considered Riverfront as shown in Figure 8 and includes the public parking lot and facilities at Plum Island Point down to the South Jetty. This area overlaps with all the other resource areas discussed above. Any project that falls within Riverfront must adhere to its performance standards as well as any others that are present.

An exception for meeting Riverfront performance standards applies to any project requiring a Chapter 91 license. These are projects that fall below Mean High Water such as piers or dredging activities.

- Structures and activities subject to a M.G.L. c. 91 waterways license or permit, or authorized prior to 1973 by a special act, are exempt, provided the structure or activity is subject to jurisdiction and obtains a license, permit, or authorization under 310 CMR 9.00. (310 CMR 10.58 (6)(i))

2. Functions

Riverfront Areas are likely to be significant to protect the private or public water supply; to protect groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries.

3. Critical Characteristics

Land adjacent to rivers and streams can protect the natural integrity of these water bodies. The presence of natural vegetation within Riverfront Areas is critical to sustaining rivers as ecosystems and providing these public values. The Riverfront Area can prevent degradation of water quality by filtering sediments, toxic substances (such as heavy metals), and nutrients (such as phosphorus and nitrogen) from stormwater, nonpoint pollution sources, and the river itself. Sediments are trapped by vegetation before reaching the river. Nutrients and toxic substances may be detained in plant root systems or broken down by soil bacteria. Riverfront Areas can trap and remove disease-causing bacteria that otherwise would reach rivers and coastal estuaries where they can contaminate shellfish beds and prohibit safe human consumption.

4. Presumption

Where a proposed activity involves work within the riverfront area, the issuing authority shall presume that the area is significant to protect the private or public water supply; to protect the groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries.

The presumption is rebuttable and may be overcome by a clear showing that the riverfront area does not play a role in the protection of one or more of these interests. In the event that the presumption is deemed to have been overcome as to the protection of all the interests, the issuing authority shall make a written determination to this effect, setting forth its grounds on Form 6. Where the applicant provides information that the riverfront area at the site of the activity does not play a role in the protection of an interest, the issuing authority may determine that the presumption for that interest has been rebutted and the presumption of significance is partially overcome.

5. Performance Standards

Where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. In the event that the presumption is partially overcome, the issuing authority shall make a written determination setting forth its grounds in the Order of Conditions and the partial rebuttal shall be taken into account in the application of 310 CMR 10.58 (4)(d)1.a. and c.; the issuing authority shall impose conditions in the Order that contribute to the protection of interests for which the Riverfront Area is significant.

- Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the Riverfront Area, as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the Riverfront Area is also within the buffer zone to another resource area, the performance standards for the Riverfront Area shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the Riverfront Area.
- Protection of Rare Species. No project may be permitted within the Riverfront Area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.
- Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.
- No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the Riverfront Area to protect the interests identified in M.G.L. c. 131, § 40.

6. Existing Conditions of Riverfront

The Riverfront Area on Plum Island consists of sandy beach and coastal dune. The northern tip of Plum Island is on the Merrimack River and the Riverfront area runs southward to the “South Jetty.”

The condition of the Riverfront is good in terms of recreational purposes. It also has a large dune area that provides nesting habitat for Piping Plovers.

G. Resource Area Management Recommendations

The management recommendations presented below are for the entire beach area, unless otherwise specifically noted. The implementation of these recommendations is contingent upon the City authorizing funds and enlisting volunteer efforts.

1. Identify beach property owned or managed by the state and/or the City of Newburyport appropriate for Beach Management activities, including public ROWs/public access ways.
2. Review records including deeds and surveys, combined with physical inspection to identify specific parcels of land appropriate for management activities.
3. Review the existing land management agreement that is in place with DCR and the City that authorizes Newburyport to manage the state-owned portion of the beach. Assess whether this needs to be updated/revised.
4. Compare the Newburyport Wetlands Ordinance to the latest state building code in regard to Coastal Construction (7th Edition of The Massachusetts Basic Building Code 780 CMR 120.G , Appendix G: Flood-Resistant Construction and Construction in Coastal Dunes). Revise the Ordinance in areas where it is not as strict (or detailed) as the building code.
5. Continue to remove litter from the beach. The City will also educate visitors regarding the importance of trash removal.
6. Establish a program for beach and dune nourishment.
7. Implement dune nourishment techniques, as necessary, in appropriate locations through the use of snow fencing. Erect snow fences in appropriate locations in order to build dunes. Monitor condition of snow fence and replace, reinforce and repair as needed. The extent of snow fencing will be contingent upon available funding.
8. Plant Beach Grass and other vegetative plantings to stabilize dunes in conjunction with snow fence installation. Inspect beach grass plantings periodically. Replace and supplement plantings as needed, in conjunction with snow fence repair and other management measures. Monitor the status of the accumulation of sand and the condition of plantings to determine the scope of maintenance and restorative measures. The extent of beach grass planting would be contingent upon available funding. NOTE: plans for beach grass planting and installation of snow fencing must be submitted to NHESP for review in order to determine possible adverse effects on wildlife.
9. Place signs at dune restoration locations identifying the location as beach grass planting areas and dune restoration sites to minimize damage to beach grass and dune.
10. Notify residents and owners of private property of benefits of erecting snow fences and beach grass plantings through the newspaper; informational literature, talks, lectures and public meetings on the topic.
11. Shoreline birds, including the federally and state-listed threatened species, the Piping Plover, forage in the wrack. In addition, the Plover nesting period begins in mid-April. It is therefore recommended that the Newburyport DPS implement a program that includes:
 - a. Re-scheduling beach raking and debris removal to March
 - b. Preserve the wrack that is collected (removing the interspersed trash) and place it at the toes of the dune.
 - c. Arrange to have a qualified wildlife monitor on site if beach cleaning is to take place when rare or endangered nesting birds are present.
12. Newburyport DPS will follow the recommendation by CZM that raking by mechanical means should be performed no closer than 10-15 feet from the toe of the dune.

13. Videotaping beach/dunes during the spring and fall to visually document resource area conditions.
14. Create and maintain a Sand Stockpile Area (SSA) within the parking lot area at the Point or other area approved by the City and DCR. Sand from the SSA will be used for the purposes of emergency storm response, sand nourishment/restoration at critical areas, and repairing/maintaining public access ways and other access structures located along/throughout the public beach.
15. Continue to prohibit structures that act as barriers against the lateral movement of sand for dune building.
16. Coordinate with U.S. Fish & Wildlife (USFWS) and the Massachusetts Division of Fisheries & Wildlife, Natural Heritage Endangered Species Program (NHESP) for guidance on wrack management.

V. RARE SPECIES AND WILDLIFE MANAGEMENT

A. Rare Species Protection and Habitat Management

The section of Plum Island within the City of Newburyport is within a Priority Habitat of Rare Species (PH 1321) and Estimated Habitat of Rare Wildlife (EH 65) as designated by the Natural Heritage and Endangered Species Program (see Figures 9A and 9B, respectively). All projects within Priority Habitat fall under the jurisdiction of the MA Endangered Species Act (MESA), as implemented by the MA Natural Heritage and Endangered Species Program (NHESP). MESA contains prohibitions against “taking” of a state-listed species and a review process with NHESP is required for projects within Priority Habitat of Rare Species. The review guidelines explain which projects require MESA filings and also include specific exemptions for certain activities. All projects within Priority Habitat of Rare Species should consult the MESA review process guidelines. All projects within Estimated Habitat of Rare Wildlife requiring a Notice of Intent (NOI) must submit a copy of the NOI to NHESP for review.

The primary species of concern in this area is the Piping Plover (*Charadrius melodus*), which is listed as both a Federal and State Threatened Species. Piping Plovers nest on coastal beaches above the high tide line, on sand flats at the end of sand spits, on gently sloping fore-dunes, and in blowouts or overwash areas between or behind coastal dunes. Plover nesting typically occurs between the end of April through early June. Chicks typically hatch anytime from early June through mid to late July, but can be later if nesting has been interrupted by weather conditions. Its nest is a simple scrape in the sand or mixtures of sand, gravel and shells. The nest is typically placed on open sand or in patches of sparse to moderately dense beach grass and other dune vegetation. The management of the beach for threatened and endangered species habitat is an intense challenge, given the potential conflicts with recreational users of the beach.

Least Terns (*Sternula antillarum*), which are a State-listed species of Special Concern, are not known to nest on the Newburyport section of beach, but they do occur at the Parker River National Wildlife Refuge (PRNWR) to the south. The nesting periods of the Least Tern are similar to those of the Piping Plover. However, terns nest in colonies while plovers nest in isolated pairs.

The City of Newburyport is working with the PRNWR to establish a Memorandum of Understanding (MOU) which will establish protocols for the monitoring and protection of Piping Plovers on Plum Island (see Appendix I). The MOU has also been reviewed by the USFWS New England Field Office and should be finalized before Fall 2009. USFWS and NHESP guidelines for the managing recreational use of beaches to protect Piping Plover, Terns, and their habitats are provided in Appendix J. These documents will also provide assistance to the City in monitoring and protecting Piping Plover habitat.

Under the MOU, personnel from the PRNWR will identify and monitor piping plover nests and fledglings along City property throughout the piping plover nesting and fledging season (April through August). They will also install and monitor symbolic fencing and signage to deter people from entering nesting plover territory and monitor beach raking activities. The PRNWR has provided the City with maps of past nesting locations as shown in Figure 10. PRNWR will also provide the City with maps of current and future nesting locations. The PRNWR will work with the City to determine if further management strategies are required, including possible adjustments to trash bin locations and beach cleaning. The City will provide funding for the necessary equipment.

The MOU also states that PRNWR will provide annual training of any City staff that work on the beach as to how to best avoid plovers and terns that may be nesting or foraging. The training will include guidance in the use of ATVs, beach raking equipment, trucks or other equipment on the beach.

In addition to protecting rare and endangered wildlife, care must be taken to avoid damaging rare plant species. A list of rare plant species can be found on the NHESP website at http://www.mass.gov/dfwele/dfw/nhesp/species_info/mesa_list/mesa_list.htm.

B. Wildlife Management

Dead or injured marine animals are occasionally discovered along the beach and should be reported to the appropriate agency. In the case of injured or dead marine mammals or reptiles (sea turtles), the New England Aquarium should be notified immediately.

Other dead animals and fish will either be buried in a remote location within the study area or removed by staff from the Newburyport Health Department

Other wildlife species, including skunks, foxes and coyotes, can be attracted to homes because of trash, food waste, pet food and bird food. The City will work with homeowners to remind and educate them how to deter unwanted or nuisance wildlife species.

C. Rare Species and Wildlife Management Recommendations

1. The City will adhere to the MOU established between the City and the PRNWR.
2. Avoid vehicle use in the vicinity of nesting Piping Plovers, except in the case of an emergency.
3. Portions of the primary dune system that may be over washed by natural storm events will be left untouched to enhance nesting habitat for plovers and least terns, and provide travel corridors for plover chicks.
4. Beach raking and debris removal performed by Newburyport DPS should take place before the Piping Plover nesting period (before April).
5. Wrack that is raked from the beach by Newburyport DPS should be cleaned of debris and deposited on the upper portions of the beach, close to the toe of the dunes to provide food for foraging birds.
6. Post signs at the Point that instruct the public as to what to do (and not do) in the case of a stranded marine animal (e.g., call the New England Aquarium if the animal is injured, don't touch or attempt to move the animal).
7. The City should work with homeowners/residents to minimize the attraction of wildlife species onto their property or in public areas.
8. Obtain maps and lists of rare plant species (from NHESP and/or MESA) that may reside in the study area. Consult these for any construction activities in the study area or adoption of maintenance plans.

VI. STORM-RELATED MAINTENANCE AND DAMAGE PROTECTION

A. General

Barrier beaches are dynamic landforms that are constantly moving and shifting in response to coastal processes. In storm events, the beach and dune form and location shift as storm energy is dispersed and dissipated, allowing the barrier beach system to keep up with sea-level rise and changing sediment supply. The natural storm damage prevention function of the beaches and dunes on a barrier beach is dependent on the ability of the system to respond in this way. An important aspect of the beach and dune system's natural protection is to shift sand from the beach and dunes into near shore bars, which in turn "trip" incoming waves and cause wave energy to be diminished before it reaches the shoreline. Over time after a storm event, the sediment shifts back onshore, and vegetation becomes re-established in the newly formed profile. In addition, dune erosion and overwash actually create endangered species habitat. Protection of these critical storm response characteristics of barrier beaches is essential to appropriate barrier beach management.

Erosion and flooding from coastal storms, such as Nor'easters and hurricanes, often result in significant damage or loss of property. However, even smaller, more frequently occurring storms may pose potentially greater risks to coastal areas. The Newburyport section of Plum Island, as part of the barrier beach system, plays an intrinsic role in protecting the mainland against storm damage. The primary dune (the dune that is closest to the ocean), is the first line of defense against storms. Vegetated dunes absorb the force of waves created by on-shore storms and shield buildings and inland areas from storm damage and flooding. The height and volume of the dune determine how much protection it can provide from specific storm events. The dune volume can be significantly eroded during multiple small storms, reducing its ability to provide protection during subsequent storms. The height of the dune is not the only factor in providing storm damage protection – the volume is also very important.

The Massachusetts Coastal Hazards Commission (CHC) recently cited decreased sediment supplies, and sea level rise as contributing factors to the decrease of the ability of dunes and beaches to perform their storm-protective functions. The City is committed to working towards maintaining a balance between resource protection and human use of the barrier beach to ensure storm buffering and flood protection.

B. Debris Removal

The City will continue to remove storm debris as described in Section IV. "Resource Area Management and Protection."

C. Access Way Repair

The City will continue to make repairs to access ways as described in Section III. B. "Public Access."

D. Storm-Related Beach and Dune Maintenance

Stockpiled sand from the SSA will be used to fill voids within the beach and dunes, on an emergency basis and prior to planting beach grass and installing snow fence. Equipment to be used will be in good condition with no leaks or spilling that could occur while the equipment is on the beach. The equipment used to conduct these activities is those discussed in Section IV Resource Area Management and Protection.

E. Storm-related Maintenance and Damage Protection Recommendations

The following actions may be taken as emergency measures, with the approval of the Conservation Commission, depending on the seriousness of the damage to the dunes (as detailed in the City of Newburyport's "Storm Emergency Certification Conditions"):

1. Temporary repair of coastal engineering structures, including a groin, jetty, breakwater, seawall, revetment, or bulkhead, may be undertaken provided such a structure was previously licensed.
2. Sediment may be replaced in areas where the storm has caused erosion, in order to provide temporary stabilization of the area. Sand to be used may not be removed from any existing coastal dune, as defined in the Wetlands Protection Act and Regulations. Documentation must be provided to the Conservation Commission identifying the source of all sediment used, and these must be of compatible grain size and color to existing sediment on the beach. Specifications for location and volume of sand to be brought in must be approved by the Conservation Commission before work can commence. The method to be used for sand delivery and placement must be included in the specifications provided.
3. Public structures, buildings, or foundations may be stabilized and shored up, but only to the extent that such work is necessary in order to prevent imminent harm to the structure. More complete restoration requires the filing of a Notice of Intent, as put forth in 310 CMR 10.05(4).

VII. PUBLIC OUTREACH AND EDUCATION

A. Education

An informed and educated visitor to the Plum Island Beach is important to maintaining the barrier beach. A clear and understandable public education program will contribute to the visitor abiding by the rules and regulations established and the actions needed to maintain the barrier beach.

It is recommended that the City encourage the formation of a Beach Advisory Committee under the Newburyport Conservation Commission. The Committee would be made up of volunteer residents of the Newburyport section of Plum Island. Their charter would be to promote stewardship of the island through education, outreach and special projects.

The Committee would employ environmental education programs and projects to inform residents and non-residents of vital issues affecting the barrier beach. Specific projects which could provide for public participation and education include the planting of dune grass, erecting snow fences to assure public access along rights of way, providing signage, offering lectures on environmental issues and communicating items of interest to local newspapers.

B. Litter

As discussed earlier, litter is a large problem on Plum Island. However, there are many opportunities to minimize littering, and to mitigate the impact of littering as well as clean up after the fact. Much of this can be accomplished through public outreach and education. Perhaps most important are beach residents' actions taken to prevent littering from occurring in the first place. The support of island residents is critical in providing year-round awareness in the drive against litter.

On-going litter abatement and awareness campaigns can be effective. Teaming with local merchants to limit the amount of take-out food wrappings and containers can also serve to reduce the potential for litter in the first place.

School outreach can include talks on various aspects of litter reduction. Publicizing "no litter zones", and clearly delineating litter enforcement statutes and fines, will assist in raising the awareness of not only the local population, but of visitors as well. Assuming that visitors will bring articles that will not "go home", the strategic placement of convenient, highly-visible, attractive disposal barrels or receptacles is mandatory. In addition, recycling containers should be placed along with trash barrels.

The actions listed above apply not only to residents but also filter onto the general populace. For example, dog owners from anywhere are allowed free range of the beach area from mid-September thru mid-May. An effective aid in reducing dog feces problems is to provide disposable pet waste bag dispensers at access areas located near parking spaces.

C. Signage

Posting of signs is one method of informing the beach-going public regarding matters of importance to preservation of the barrier beach. Posting and informing the public in this fashion will lead to a greater degree of compliance with rules and regulations.

To be effective, signs should be quickly readable, with a short, pointed message. They must fit into the landscape without being so inconspicuous that they are ignored. The shape, size, color and placement must avoid visual pollution (garish colors, overpowering designs), but attract attention with appropriate use of color and careful attention to sign placement for high visibility, accessibility, and readability.

The content of the signs could include a number of topics or themes including: natural history of the barrier beach; wildlife of the island; stewardship of natural resources along with those that present rules and regulations. If the signage is asking for a particular behavior, it is important that it include *the reason* that it is important (e.g., the importance of keep your dog leashed, particularly at certain times of the year for the protection of nesting plovers). Any new signage will be submitted to DCR for review.

Maintenance is extremely important, as is rapid replacement of lost, stolen, or damaged signs. If possible standardized, generic signage should be coordinated with other agencies such as the Massachusetts Department of Conservation and Recreation, Massachusetts Coastal Zone Management, or the Massachusetts Division of Fisheries. Signs should be placed not only for information purposes, but also to aid in controlling pedestrian traffic. Posting of the ordinances and penalties for violations must be clearly done in order to foster compliance.

D. Public Outreach and Education Recommendations

1. Allocate time, funding and personnel resources to establishing and maintaining an educational program.
2. Prepare educational materials and make available to the general public. The materials can include:
 - i. Lectures
 - ii. Brochures
 - iii. Curriculum materials
 - iv. Signs and Exhibits
 - v. Videos/slide shows
 - vi. Books, pamphlets, maps etc.
 - vii. Bulletin board
3. Develop a public awareness program, including school outreach, to help reduce the amount of litter on the beach.
4. Place trash receptacles at strategic, easily-seen and convenient locations.
5. Determine appropriate locations and standard templates for each combination of rules and regulations at Rights of Way (ROW) and Plum Island Point.
6. Place standard-sized signs specific to rights of way (ROWs), beach access, lifeguards (or lack thereof), dogs, dune protection/restoration and alcohol prohibition
7. Erect a bulletin board, placed at Plum Island Point for the purpose of educating and informing the public about City of Newburyport Beach Management actions, conservation information, projects, with schedules of planned activities, and educational data.

8. Establish a maintenance program whereby routine, scheduled inspections would monitor the condition of signage and lead to actions which would prolong the visibility and effectiveness of the signage in place.
9. Maintain vigilance regarding any changes (location and/or information) necessary to retain or upgrade effectiveness.
10. Partner with merchants to limit the amount of take-out food wrappers and containers.

VIII. SUMMARY OF RECOMMENDATIONS

This section summarizes the recommendations that have been presented in this plan with respect to the following management classifications.

A. Public Use, Access Ways and Safety Recommendations

Public Access Ways

1. Verify existing public Rights of Ways (ROWs) to the beach, using the 2006 “Plum Island Access Plan” as a guide using deed records or available plan information.
2. Assess existing public ROWs and other points of established public access to determine if their current use is having an adverse effect on the dune system or on wildlife habitat. Establish a plan for closure, as applicable. For those ROWs and public access ways that the City determines should remain open, evaluate the most appropriate base for each access way (e.g., on-grade walkway, elevated boardwalk, sand pathway with snow fencing, etc.) and create an implementation plan.
3. Create maintenance plans/schedules for each type of path implemented under Task 2 above (i.e., elevated boardwalk, on-grade mat, sand path, etc.) to include sweeping, inspections after major storms and removal of on-grade mats during winter months
4. Designate a location to store on-grade mats during winter months.
5. Identify and clearly mark each ROW/access way with appropriate signage.
6. Designate a City department (or departments) to oversee and maintain the public ROWs/access ways.
7. Clearly demarcate (by signage) the access ways that are used by lifeguard and police vehicles.
8. Perform periodic inspections of access ways used by authorized vehicles (seasonally and after major storms) to determine if maintenance is required (raking, or additional nourishment in the way of additional beach-grade sediments). Any nourishment needed for the access ways shall come from stockpiled sand or a clean, compatible, off-site source.
9. Conduct periodic inspections of all access ways to ensure that safe passage to/from the beach area is maintained. If safe access is compromised at any designated public access way locations, the City will take action (such as roping off unsafe areas) to divert pedestrian/vehicular access until it can be restored.
10. The City may temporarily block off existing public access ways during/after storm events as a matter of public safety.
11. All on-grade boardwalk structures installed at access way locations will be placed directly on top of the existing sand at the beginning of each recreational season and then removed at the end of the season to prevent them from being destroyed by high running tides and storms. Written notification will be submitted to the Conservation Commission a minimum of 2 weeks prior to the installation of any new on-grade walkways. On-grade boardwalks will be maintained by manually sweeping, lifting and/or shaking methods. Care will be taken not to modify existing grade elevations so as not to create a pathway that will encourage high velocity waves to travel up and cause erosion of the beach/dunes during storm events or exceptional high tides.
12. The City will clear sand from designated public access ways, where appropriate and as necessary, to maintain their function, and keep sand within the immediate area, either in the dune or on the beach, wherever it is most beneficial. Maintenance of these access ways will be primarily conducted by sweeping. Sand will be swept, by manual methods, to the sides or towards the entryway where

pedestrian traffic is the greatest using manual methods.

13. Whenever on-grade boardwalks are replaced, elevated boardwalks will be installed where feasible.
14. Elevated boardwalks that become buried will remain buried. The City will not remove sand, but rather, will smooth it out (by hand) within the designated boundaries of the access way, matching existing surrounding grades. New elevated boardwalk structures will be built over the buried structures as funds become available. Any components of the existing boardwalk that are partially buried, damaged or broken will be removed to ensure public safety. All new elevated boardwalk structures will be constructed at an appropriate elevation to minimize/avoid impacts to naturally migrating sand and in accordance with the "City of Newburyport Standards for Boardwalk and Walkover Construction (see Appendix G). Written notification will be submitted to the Conservation Commission a minimum of 2 weeks prior to the installation of replacement boardwalks.
15. Should the City wish to install any new vehicular access ways for the purpose of emergency response or maintenance, they will be minimized in width and length to the most feasible extent without losing any important vehicular functions. Access will be designed to be maintained over existing dune elevations, rather than creating/maintaining access at a lower grade than adjacent dunes to minimize impacts from erosion over time.
16. Engage public volunteer groups (e.g., the Plum Island Taxpayers Association) to help the City monitor and maintain ROWs/access ways.

Other Recommendations:

17. Continue current maintenance practices for the parking lot and public buildings (restrooms and ticket booth) located at Plum Island Point.
18. Continue the ban on hunting on the beach.
19. Continue the ban on the use of any motor vehicle or motorized vehicles on the beach, with the exception of authorized emergency vehicles and motorized equipment located at Plum Island Point for the placement of docking and boating equipment (City Ordinance, c. 4, a. III, s. 4-101(c)).
20. Change time period in the City Ordinance during which dogs are banned from the beach (from May 15 to April 1) in order to protect nesting Piping Plovers. Also increase fines for violation of this regulation from \$25.00 to at least \$50.00.
21. Erect signage and notify the public of the requirements regarding dogs on the beach. Include rules (per City Ordinance) to pick up and carry out animal waste generated by their pets and the ban against dogs on the Beach, clearly stating the penalties (fines) for failure to comply.
Signage should include educational messages as to why it is important to pick up animal waste—for both health and water quality reasons. Also state the leash requirements for dogs for off-season times and why it is important (protection of wildlife habitat, prevention of dune and vegetation destruction, etc.) See City Ordinances c. 3, a. I, s. 3-2; c. 4, a. II, s. 4-101(e) and c. 3, a. II, s. 3-26.
22. Provide biodegradable bags at beach access points for owners to collect and transport animal waste. Provide waste receptacles at beach in off-season with weekly pickup. Recommend participation of dog-owners in Plum Island to provide bags and trash receptacles.
23. Provide units for recycling fishing gear (fishing line, etc.)
24. Erect signage educating the public as to the potential danger of fishing gear to wildlife.
25. As part of public education signage, include a message that everything that is carried onto the beach must be carried out.
26. Construction activities associated with major city facilities improvements will continue to require a separate application (Notice of Intent or Request for Determination) to be filed with the Conservation Commission and MassDEP.

27. Continue to implement all watercraft management steps in cooperation with the City of Newburyport Harbormaster.
28. Determine if special use areas for swimming, surfing, and fishing should be adopted (for safety purposes). If so, this could be managed by educational signage, emphasizing the rules of beach etiquette between swimmers, surfers, anglers, etc.
29. Monitor and manage, if necessary, the impact of human activities to minimize the impact to the dunes, beach and salt marsh areas and resident wildlife.
30. Designate and mark areas of special conditions with buoys and signage, as appropriate.
31. Install symbolic and/or snow fencing and signage for onshore areas where human activities affect wildlife or fragile resource areas (dunes, beach grass, salt marsh, Piping Plover habitat, etc).

B. Resource Area Management Recommendations

1. Identify beach property owned or managed by the state and/or the City of Newburyport appropriate for Beach Management activities, including public ROWs/public access ways.
2. Review records including deeds and surveys, combined with physical inspection to identify specific parcels of land appropriate for management activities.
3. Review the existing land management agreement that is in place with DCR and the City that authorizes Newburyport to manage the state-owned portion of the beach. Assess whether this needs to be updated/revised.
4. Compare the Newburyport Wetlands Ordinance to the latest state building code in regard to Coastal Construction (7th Edition of The Massachusetts Basic Building Code 780 CMR 120.G , Appendix G: Flood-Resistant Construction and Construction in Coastal Dunes). Revise the Ordinance in areas where it is not as strict (or detailed) as the building code.
5. Continue to remove litter from the beach. The City will also educate visitors regarding the importance of trash removal.
6. Establish a program for beach and dune nourishment.
7. Implement dune nourishment techniques, as necessary, in appropriate locations through the use of snow fencing. Erect snow fences in appropriate locations in order to build dunes. Monitor condition of snow fence and replace, reinforce and repair as needed. The extent of snow fencing will be contingent upon available funding.
8. Plant Beach Grass and other vegetative plantings to stabilize dunes in conjunction with snow fence installation. Inspect beach grass plantings periodically. Replace and supplement plantings as needed, in conjunction with snow fence repair and other management measures. Monitor the status of the accumulation of sand and the condition of plantings to determine the scope of maintenance and restorative measures. The extent of beach grass planting would be contingent upon available funding. NOTE: plans for beach grass planting and installation of snow fencing must be submitted to NHESP for review in order to determine possible adverse effects on wildlife.
9. Place signs at dune restoration locations identifying the location as beach grass planting areas and dune restoration sites to minimize damage to beach grass and dune.
10. Notify residents and owners of private property of benefits of erecting snow fences and beach grass plantings through the newspaper; informational literature, talks, lectures and public meetings on the topic.
11. Shoreline birds, including the federally and state-listed threatened species, the Piping Plover, forage in the wrack. In addition, the Plover nesting period begins in mid-April. It is therefore recommended that the Newburyport DPS implement a program that includes:
 - a. Re-scheduling beach raking and debris removal to March
 - b. Preserve the wrack that is collected (removing the interspersed trash) and place it at the toes of the dune.
 - c. Arrange to have a qualified wildlife monitor on site if beach cleaning is to take place when rare or endangered nesting birds are present.
12. Newburyport DPS will follow the recommendation by CZM that raking by mechanical means should be performed no closer than 10-15 feet from the toe of the dune.
13. Videotaping beach/dunes during the spring and fall to visually document resource area conditions.
14. Create and maintain a Sand Stockpile Area (SSA) within the parking lot area at the Point or other area approved by the City and DCR. Sand from the SSA will be used for the purposes of emergency storm

response, sand nourishment/restoration at critical areas, and repairing/maintaining public access ways and other access structures located along/throughout the public beach.

15. Continue to prohibit structures such as privacy fencing and latticework around decks and foundation pilings that act as barriers against the lateral movement of sand for dune building.
16. Coordinate with U.S. Fish & Wildlife (USFWS) and the Massachusetts Division of Fisheries & Wildlife, Natural Heritage Endangered Species Program (NHESP) for guidance on wrack management.

C. Rare Species and Wildlife Management Recommendations

1. The City will adhere to the MOU established between the City and the PRNWR.
2. Avoid vehicle use in the vicinity of nesting Piping Plovers, except in the case of an emergency.
3. Portions of the primary dune system that may be over washed by natural storm events will be left untouched to enhance nesting habitat for plovers and least terns, and provide travel corridors for plover chicks.
4. Beach raking and debris removal performed by Newburyport DPS should take place before the Piping Plover nesting period (before April).
5. Wrack that is raked from the beach by Newburyport DPS should be cleaned of debris and deposited on the upper portions of the beach, close to the toe of the dunes to provide food for foraging birds.
6. Post signs at the Point that instruct the public as to what to do (and not do) in the case of a stranded marine animal (e.g., call the New England Aquarium if the animal is injured, don't touch or attempt to move the animal).
7. The City should work with homeowners/residents to minimize the attraction of wildlife species onto their property or in public areas.
8. Obtain maps and lists of rare plant species (from NHESP and/or MESA) that may reside in the study area. Consult these for any construction activities in the study area or adoption of maintenance plans.

D. Storm-related Maintenance and Damage Protection Recommendations

1. Temporary repair of coastal engineering structures, including a groin, jetty, breakwater, seawall, revetment, or bulkhead, may be undertaken provided such a structure was previously licensed.
2. Sediment may be replaced in areas where the storm has caused erosion, in order to provide temporary stabilization of the area. Sand to be used may not be removed from any existing coastal dune, as defined in the Wetlands Protection Act and Regulations. Documentation must be provided to the Conservation Commission identifying the source of all sediment used, and these must be of compatible grain size and color to existing sediment on the beach. Specifications for location and volume of sand to be brought in must be approved by the Conservation Commission before work can commence. The method to be used for sand delivery and placement must be included in the specifications provided.
3. Public structures, buildings, or foundations may be stabilized and shored up, but only to the extent that such work is necessary in order to prevent imminent harm to the structure. More complete restoration requires the filing of a Notice of Intent, as put forth in 310 CMR 10.05(4).

E. Public Outreach and Education Recommendations

1. Allocate time, funding and personnel resources to establishing and maintaining an educational program.
2. Prepare educational materials and make available to the general public. The materials can include:
 - i. Lectures
 - ii. Brochures
 - iii. Curriculum materials
 - iv. Signs and Exhibits
 - v. Videos/slide shows
 - vi. Books, pamphlets, maps etc.
 - vii. Bulletin board
3. Develop a public awareness program, including school outreach, to help reduce the amount of litter on the beach.
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9. Maintain vigilance regarding any changes (location and/or information) necessary to retain or upgrade effectiveness.
10. Partner with merchants to limit the amount of take-out food wrappers and containers.

FIGURES

APPENDIX A

State-City Land Management Agreement Memorandum of Understanding

APPENDIX B

Executive Order No. 181 Re: Barrier Beaches

APPENDIX C

City of Newburyport Wetlands Ordinance

APPENDIX D

Guidelines for Plum Island Applications

APPENDIX E

Applicable Laws & Regulations

APPENDIX F

2006 DCR Plum Island Public Access Plan

APPENDIX G

**City of Newburyport
Standards for Boardwalk & Walkover Construction**

APPENDIX H

DCR Guide to Dune Stabilization

APPENDIX I

**Memorandum of Understanding (draft)
City of Newburyport & USFW PRNWR**

APPENDIX J

**NHESP & USFWS Guidelines for Managing Recreational Use
Of Beaches to Protect Piping Plovers, Terns
and Their Habitats In Massachusetts**

APPENDIX K

Resource Protection Partners

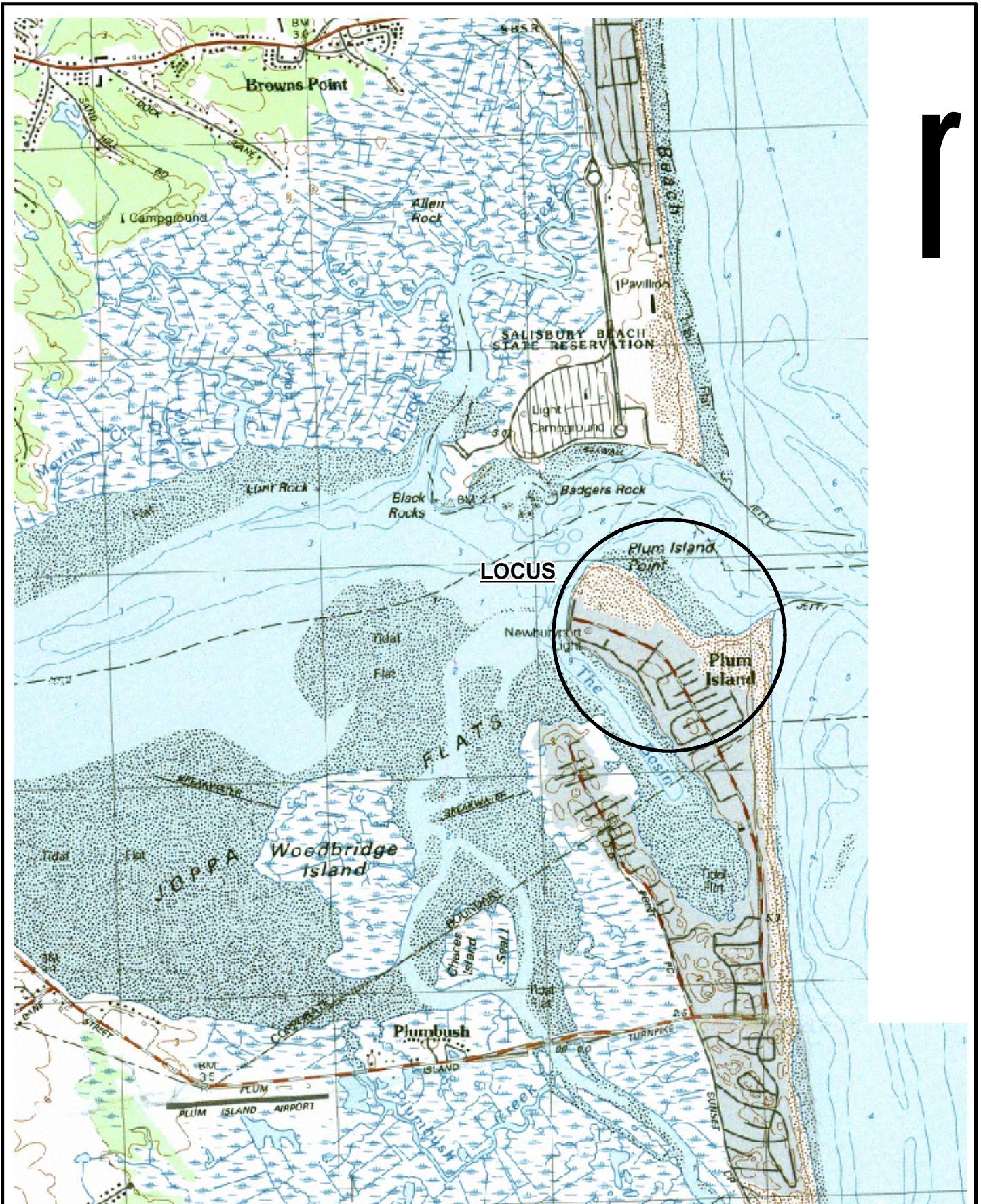
APPENDIX L

FEMA Letter 07-01-0522P

APPENDIX M

**Beach Management Plan
Order of Conditions**

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1

MERRIMACK RIVER

ATLANTIC OCEAN


THE BASIN


NEWBURYPORT
NEWBURY


77-125-B
77-125
77-125-A

Map/Lot	Owner
77-125	Commonwealth of Massachusetts
77-125-A	Commonwealth of Massachusetts
77-125-B	Federal Government (United States of America)

LEGEND

MANAGEMENT AREA

AREA MANAGED BY U.S. COAST GUARD

TOWN BOUNDARY

1



PARKING LOT



RESTROOM FACILITY



JASON SAWYER
MEMORIAL PLAYGROUND

MERRIMACK RIVER




THE POINT

THE BASIN

ATLANTIC OCEAN

NEWBURYPORT
NEWBURY

LEGEND


-  MANAGEMENT AREA
-  AREA MANAGED BY U.S. COAST GUARD
-  TOWN BOUNDARY


1


Location			Description	Access Type	Signage
1	53 rd Street	Ocean	On-Grade "Mobi-Mat"	P	Yes
2	55 th Street	Ocean	On-Grade "Mobi-Mat"	P	No
3	57 th Street	Ocean	On-Grade "Mobi-Mat"	P	No
4	City Parking Lot at Point	River	Elevated Boardwalk	P, ADA	Yes
5	Plum Island Point	River	Sand path adjacent to Boardwalk	P, V	Yes
6	Plum Island Point	River	Various unmanaged footpaths through dunes	P	No
7	Off Reservation Terrace	River and Ocean	Various unmanaged footpaths through dunes	P	No
8	Grant Street	Ocean	Various footpaths	P	No
9	Plum Island Point	River	Path from the northern end of the parking lot	P, EV	Yes


Access Type: P = Pedestrian
V = Vehicular
EV = Emergency Vehicle
ADA = Handicap Accessible

LEGEND

 ACCESS POINTS

 MANAGEMENT AREA


 AREA MANAGED BY U.S. COAST GUARD


 TOWN BOUNDARY





1


LEGEND


 MANAGEMENT AREA

 TOWN BOUNDARY

 BARRIER BEACH SYSTEM

 BARRIER BEACH-COASTAL BEACH

 BARRIER BEACH-COASTAL DUNE

 OPEN WATER



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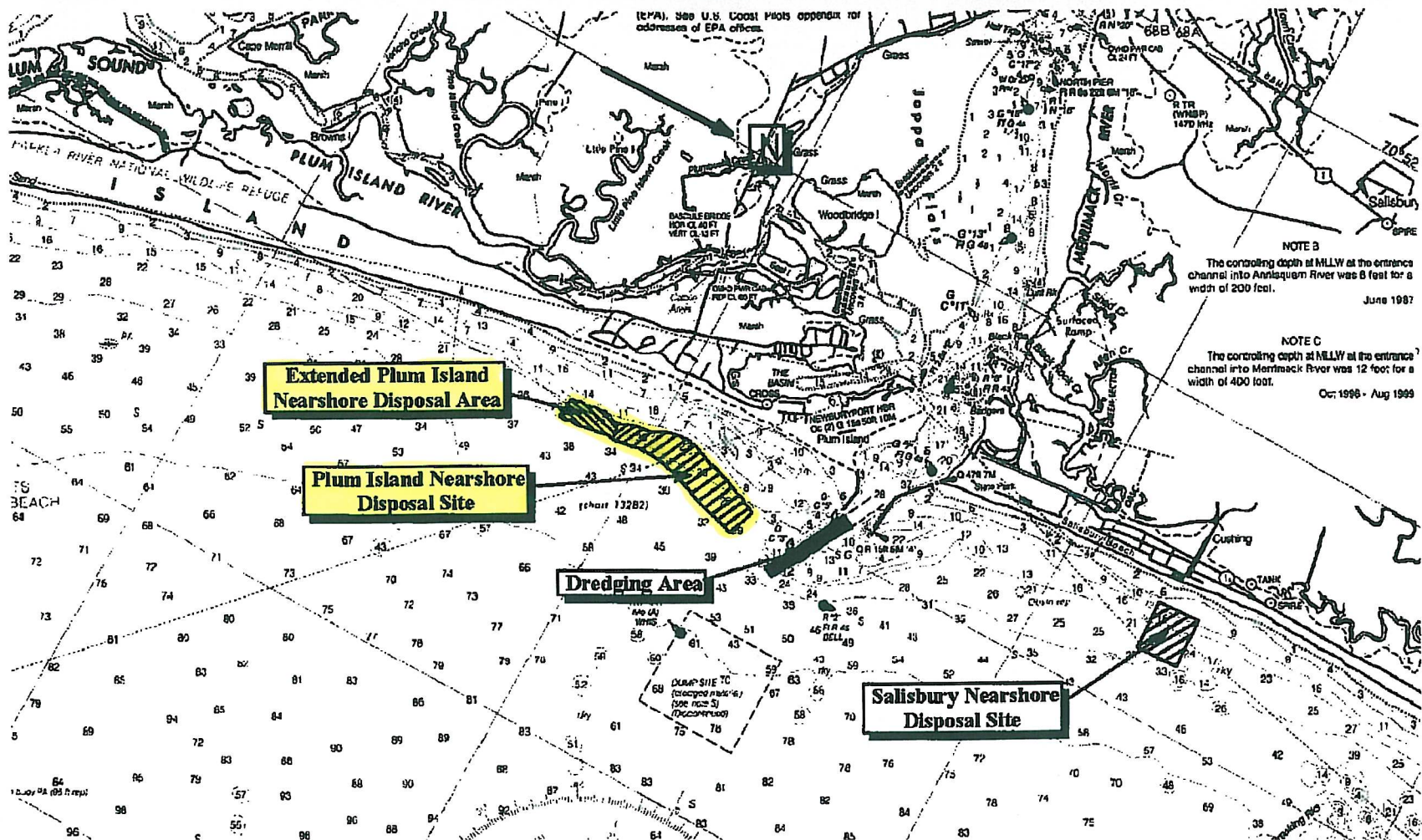




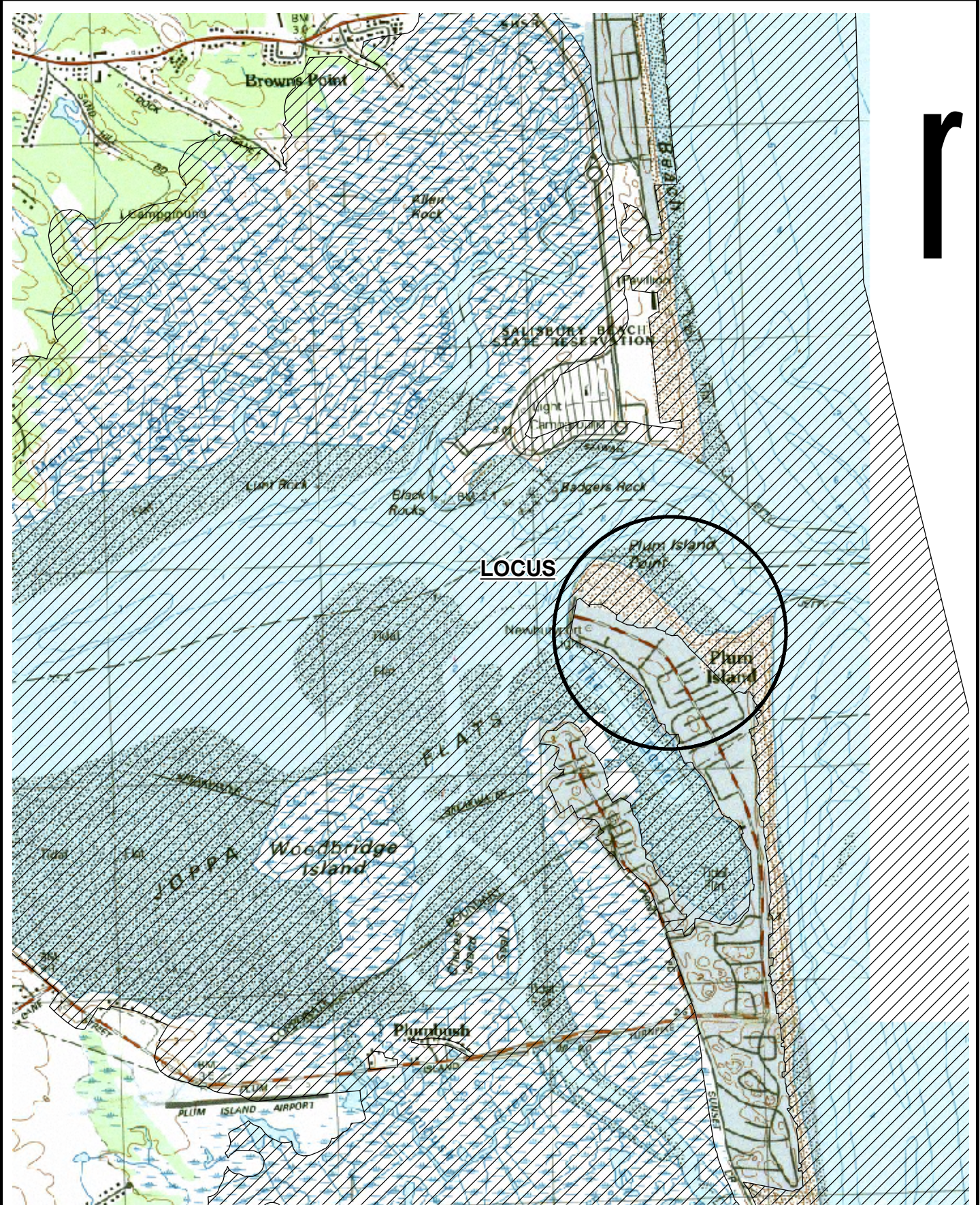
Figure 7A

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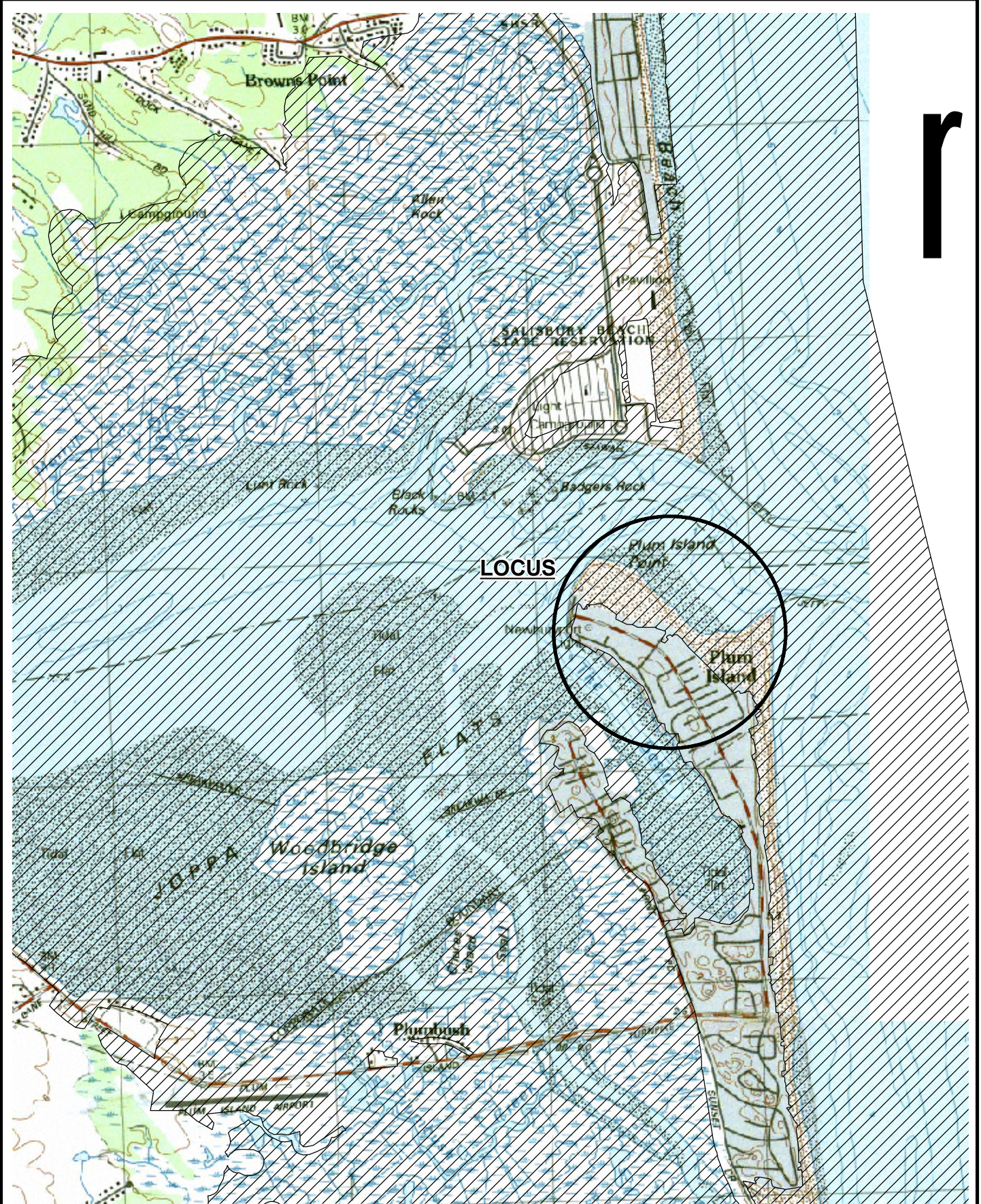




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COPY

LAND MANAGEMENT AGREEMENT
MEMORANDUM OF UNDERSTANDING

Agreement made this 23rd day of May in the year 1978 by and between the Commonwealth of Massachusetts acting by and through its Department of Environmental Management (DEPARTMENT), and the City of Newburyport, (CITY) acting by and through its Mayor.

WHEREAS; the DEPARTMENT proposes to acquire title to an area formerly known as the Merrimack River Life-saving Station on Plum Island, City of Newburyport, more particularly described in a plan on file with the DEPARTMENT, and,

WHEREAS; the CITY is desirous of continuing to operate and maintain said facility

NOW THEREFORE, in consideration of mutual covenants herein contained the parties contract and agree as follows:

I. Responsibility of the CITY

The CITY agrees at, its own expense,:

- (a) to carry out routine maintenance and staffing functions,
- (b) to take such measures as may be necessary to maintain the beach and adjacent areas in a safe, clean, orderly and attractive fashion,
- (c) to staff the area with certified life-saving personnel, commonly known as life guards, to the extent necessary to insure reasonably safe recreation conditions, and
- (d) to comply with and to insure public compliance with the rules and regulations of the DEPARTMENTS Division of Forests and Parks as they relate to recreation areas.

* The CITY further understands that it shall be permitted to impose a ~~daily parking fee of not more than \$2.00~~, or a daily parking fee of not more than two dollars (\$2.00) for use of said facility, as the case may be, or to set a rate for a season pass not to exceed twenty (\$20.00), provided, however, that the CITY shall not be permitted to discriminate in any manner, in fact or in law between its residents and citizens of the Commonwealth or the United States for the purpose of imposing said fees. Failure to abide this provision of the agreement shall empower the Commissioner of the DEPARTMENT to terminate this agreement upon twenty-four (24) hours notice to the CITY.

The CITY also agrees that any improvements to the area, made by it, shall become property of the DEPARTMENT upon termination of this agreement, for any reason, at no cost to said Department.

II. Responsibility of the DEPARTMENT

The DEPARTMENT agrees, at its own expense,:

- (a) to provide an initial clean-up of the area upon transfer of title,
- (b) to provide essential capital improvements such special or annual maintenance as it may deem necessary, and
- (c) to meet any contractual obligations it may have with third parties with respect to the property.

III. General Provisions

This agreement shall, when executed by the DEPARTMENT and the CITY be construed to license the CITY to use the property which is the subject matter hereof on a year to year basis, beginning in calendar year 1978. Said license is revocable by either party, except as provided in Article I, upon 60 days written notice to the other, without cause or reason.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals on the date first above mentioned.

THE CITY OF NEWBURYPORT

By: 

, its Mayor

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

By: 

Richard E. Kendall, its Commissioner

COMMONWEALTH OF MASSACHUSETTS

BY His Excellency

EDWARD J. King
Governor

EXECUTIVE ORDER NO. 181

BARRIER BEACHES

Preamble

A barrier beach is a narrow low-lying strip of land generally consisting of coastal beaches and coastal dunes extending roughly parallel to the trend of the coast. It is separated from the mainland by a narrow body of fresh brackish or saline water or marsh system. It is a fragile buffer that protects landward areas from coastal storm damage and flooding.

The strength of the barrier beach system lies in its dynamic character; its ability to respond to storms by changing to a more stable form. Frequently man induced changes to barrier beaches have decreased the ability of landform to provide storm damage prevention and flood control. Inappropriate development on barrier beaches has resulted in the loss of lives and great economic losses to residents and to local, state and federal governments. The taxpayer, who often cannot gain access to barrier beach areas, must subsidize disaster relief and flood insurance for these high hazard areas.

Since barrier beaches are presently migrating landward in response to rising sea level, future storm damage to development located on the barriers is inevitable.

WHEREAS, the Commonwealth seeks to mitigate future storm damage to its barrier beach areas;

NOW, THEREFORE, I, Edward J. King, Governor of the Commonwealth of Massachusetts, by virtue of the authority vested in me by the Constitution and laws of the Commonwealth, do hereby order and direct all relevant state agencies to adopt the following policies:

- 1. Barrier beaches shall be given priority status for self-help and other state and federal acquisition programs and this priority status shall be incorporated into the Statewide Outdoor Comprehensive Recreation Plan. The highest priority for disaster assistance funds shall go towards relocating willing sellers from storm damaged barrier beach areas.*
- 2. State funds and federal grants for construction projects shall not be used to encourage growth and development in hazard prone barrier beach areas.*
- 3. For state-owned barrier beach property, management plans shall be prepared which are consistent with state wetland policy and shall be submitted to the Secretary of Environmental Affairs for public review under the provisions of the Massachusetts Environmental Policy Act.*
- 4. At a minimum, no development shall be permitted in the velocity zones or primary dune areas of barrier beaches identified by the Department of Environmental Quality Engineering.*
- 5. Coastal engineering structures shall only be used on barrier beaches to maintain navigation channels at inlets and then only if mechanisms are employed to ensure that downdraft beaches are adequately supplied with sediment.*
- 6. Dredge material of a compatible grain size shall be used for barrier beach nourishment, if economically feasible.*
- 7. The Coastal Zone Management Office shall coordinate state agency management policy for barrier beach areas.*

*Given at the Executive Chamber in Boston
this 8th day of August, in the
year of Our Lord one thousand nine hundred
and eighty and of the independence of
America, two-hundred and five.*

EDWARD J. KING
GOVERNOR
Commonwealth of Massachusetts

MICHAEL JOSEPH CONNOLLY
Secretary of the Commonwealth

GOD SAVE THE COMMONWEALTH OF MASSACHUSETTS

*Adopted October 9, 2001
revised September 12, 2005*

CITY OF NEWBURYPORT WETLANDS ORDINANCE

**Newburyport Conservation Commission
60 Pleasant Street
Newburyport, MA 01950**

Tel. (978) 465-4462; Fax (978) 465-4452

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SECTION I PURPOSE

A. Purpose of the Massachusetts Wetlands Protection Act

The State Wetlands Protect Act, G.L. c. 131, §40, is intended to further the following purposes:

1. protection of groundwater supply;
2. flood control;
3. storm damage prevention;
4. prevention of pollution;
5. protection of land containing shellfish;
6. protection of fisheries; and
7. protection of wildlife habitat.

B. Special Purpose of this Wetlands Ordinance

This Ordinance is intended to further the interests set forth above and to provide enhanced protection to the Plum Island Barrier Beach for the following purposes.

1. To minimize environmental damage, loss of life, and destruction of property inevitably resulting from storms flooding and erosion;
2. To minimize public health threats resulting from storm damage;
3. To prevent loss or diminution of the beneficial functions of storm and flood damage prevention or reduction and pollution prevention provided by wetlands, beaches, dunes, barrier beaches, and coastal banks;
4. To maintain vegetative buffers to wetlands and waterbodies so as to reduce and/or eliminate runoff and other nonpoint discharges of pollutants to protect public health and preserve environmental resources; and
5. To maintain vegetative cover so that the integrity and stability of coastal dunes and banks are maintained and so that the coastal dunes and banks can fulfill their functions and promote the interests identified in Section IA.

SECTION II JURISDICTION

Except as permitted in writing by the Commission or as provided in this Ordinance, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, or otherwise altering or degrading any barrier beach, as defined in 310 CMR 10.00 *et seq.*, as the same may be amended.

This Ordinance is intended to utilize the City's Home Rule authority to provide additional protection to the barrier beach to further the purposes identified in Section IB above and to provide additional performance standards that are more

specific and more stringent than those set forth in the State Wetlands Protection Act, G.L. c. 131, §40 and the accompanying regulations, 310 CMR 10.00 *et seq.*

Written application shall be filed with the Commission to perform activities on the portion of the barrier beach located within the City of Newburyport and no activities affecting the portion of the Plum Island Barrier Beach located within the City of Newburyport shall commence without the applying for, obtaining and complying with an Order of Conditions or Determination of Applicability in accordance with the performance standards set forth in this Ordinance. Except as expressly permitted pursuant to a Variance granted in accordance with Section IV, the Commission shall issue Orders of Conditions or Determinations of Applicability in accordance with the performance standards set forth in this Ordinance.

SECTION III SPECIFIC PERFORMANCE STANDARDS FOR THE BARRIER BEACH

III-A. No development or redevelopment shall be permitted within a FEMA V-Zone or AO-Zone. Notwithstanding the foregoing, structures damaged or destroyed from fire, storm, or similar disaster may be redeveloped/repared only in accordance with current local, state and federal regulatory standards when damage to or loss of the structure is equal to or greater than 50% of the market value of the building. When damage to or loss of the structure is less than 50% of the market value of the building, redevelopment/repairs may be allowed to return the structure to pre-damaged conditions. In all instances, reconstruction, renovation or repairs to damaged structures may be authorized as stated herein, provided that there is no increase in floor area.

III-B. All new buildings or substantial improvements to existing buildings shall be built on open pilings and comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. All development and redevelopment shall comply with G.L. c. 131, sec. 40, 310 CMR 10.00 and Section 744 of the Massachusetts State Building Code Design Requirements for Floodplain and Coastal High Hazard Areas.

III-C. For the purposes of this Ordinance, the term “substantial improvement” shall mean an improvement that increases the market value of the building by an amount equal to or greater than 50% or an improvement that increases the square footage by an amount equal to or greater than 25%.

III-D. All new buildings, replacements, substantial improvements or expanded footprints less than 25% in square footage shall have their first floor built at least two feet above base flood elevation or the highest existing ground elevation whichever is higher.

III-E. Electrical, heating, ventilation, plumbing and air conditioning and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

III-F. Development or redevelopment on or within 200 feet landward of the top of a coastal bank or dune shall have no adverse impact on the height, stability or function of the bank or dune to fulfill the purposes set forth in Section IB.

III-G. In areas where there are coastal banks or primary or frontal dunes, all new buildings and structures shall be set back from the beach dune interface at a distance equal to thirty times the average yearly historical erosion as shown by the most current CZM shoreline change map.

III-H. No activity shall increase the elevation or velocity of flows in a floodplain.

III-I. Within the FEMA V Zone, A Zone, or AO Zone or their equivalent, new or reconstructed structures or development on the barrier beach that alters vegetation, interrupts sediment supply and/or changes the form or volume of a dune or beach must comply with the specific performance standards in this Ordinance and in the regulations promulgated pursuant hereto.

III.J. In all other areas of the Plum Island Barrier Beach outside of the V-Zone and AO-Zone, all new Buildings shall be built on open pilings and shall comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. All existing Buildings with Substantial Improvements, and all horizontal expansions of the existing footprint, shall be built on open pilings and shall comply with FEMA National Flood Insurance Regulations and State Building Code Regulations for elevation and flood proofing. If a Licensed Engineer certifies that an existing portion of the solid foundation will not require modifications to support the proposed building (other than new pilings exterior to the existing footprint), the existing portion of the solid foundation may remain.

Notwithstanding the previous sentence, the existing solid foundation of a *Building* shall be replaced with pilings, if, 50% or more of the exterior walls have been removed, or are proposed to be removed, and a new roof will be construction, or is proposed to be constructed. (rev. of 9/12/05)

SECTION IV VARIANCE

IV-A. The Conservation Commission may grant a variance from these special requirements when it finds after opportunity for public hearing that:

1. there are no reasonable conditions or alternatives that would allow the project to proceed in compliance with this Ordinance; and
2. mitigating measures are proposed that will allow the project to be conditioned so as to contribute to the protection of the wetland resource areas located on the barrier beach; and

3. the variance is necessary to accommodate an overriding community public interest or to avoid a decision that so restricts the use of the property as to constitute an unconstitutional taking without compensation.

IV-B. A request for a variance shall be made in writing and shall include, at a minimum the following information:

1. a description of alternatives explored that would allow the project to proceed in compliance with this Ordinance and an explanation of why each is unreasonable; and
2. a description of the mitigating measures to be used to contribute to the protection of the wetland resources located on the barrier beach;
3. evidence that an overriding public interest is associated with the project which justifies waiver of these requirements or evidence that the decision on this permit application so restricts the use of the land that it constitutes an unconstitutional taking without compensation.

SECTION V APPLICATIONS

All applications to perform activities in the City's resource areas shall be either in the form of a Request for Determination, a Notice of Intent, or an Abbreviated Notice of Resource Area Delineation. The Commission in an appropriate case may accept as the application and plans under this Ordinance the application and plans (i.e., Notice of Intent, Request for Determination of Applicability) under the Wetlands Protection Act, G.L. c. 131, § 40. Such applications shall contain data and plans as specified in the Commission's regulations, and shall be submitted in complete written form to the Commission. The Commission or its designee shall be authorized to make determinations of completeness for applications submitted to the Commission and reject those applications that do not meet the minimum submittal requirements of this Ordinance. In order to provide sufficient review time, the Commission may continue a public hearing or public meeting if new information is submitted by the applicant, or applicant's agent, less than seven (7) business days before the scheduled public hearing or public meeting.

The applicable forms must be signed by the applicant or applicant's agent where required. The Commission may require further information by regulation, guideline, or as otherwise deemed necessary for review of the proposed Application by the Commission. In order to comply with the provisions of this Ordinance, each application must be complete as filed, and must comply with the rules set forth herein and Commission's regulations.

SECTION VI HEARINGS

VI-A. Commencement:

The Commission shall commence the public hearing or meeting within 21 days from receipt of a completed application unless the applicant authorizes an extension in writing.

VI-B. Combination with State Law Hearing:

The Commission, in its discretion, may hear any oral presentation under this Ordinance at the same public hearing or public meeting required to be held under the provisions of the Wetlands Protection Act, G.L. c. 131, § 40. Notice of the time and place of such hearing(s) shall be given as required below.

VI-C. Notice:

For a public hearing, written notice of the time and place of the hearing shall be given at the applicant's expense, not less than seven (7) calendar days prior to the public hearing, by publication in a newspaper of general circulation in Newburyport, and by hand delivering or mailing, by certified mail return receipt requested, at the mailing addresses shown on the most recent applicable tax list of the assessors, a copy of such notice to all abutters within one hundred feet of the property line of the land on which the work is proposed, including, but not limited to, owners of land directly opposite said proposed work on any public or private street or way, and in another municipality or across a body of water. Proof of such notification, with a copy of the notice mailed or delivered, shall be filed with the Commission. All publications and notices shall contain the name of the applicant, a description of the area where the activity is proposed by street-address, if any, or other adequate identification of the location of the area or premises which is the subject of the notice, the date, time and place of the public hearing, the subject matter of the hearing, and the nature of the action or relief requested, if any. Public notice requirements for continued public hearings under this Ordinance shall be the same as the notification requirements set forth in 310 CMR 10.05(5)(b)3.

VI-D. Proof:

The applicant shall have the burden of proving by a preponderance of credible evidence that the activity proposed in the Request for Determination of Applicability or the Notice of Intent will not have a significant or cumulatively detrimental effect upon the interests and values protected by this Ordinance. Failure to provide to the Commission adequate evidence for it to determine that the proposed activity will not cause such impacts shall be sufficient cause for the Commission to deny permission or to grant permission with such

conditions as it deems reasonable, necessary, or desirable to carry out the purposes of this Ordinance; or to postpone or continue the hearing or public meeting to another date certain to enable the applicant and others to present additional evidence, upon such terms and conditions as deemed by the Commission to be reasonable.

Due consideration shall be given to possible effects of the proposal on all interests and values protected under this Ordinance.

VI-E. Continuances:

The Commission may continue a public hearing or public meeting in the following situations:

1. With the consent of the applicant, to an agreed-upon date, which shall be announced at the hearing; or
2. Without the consent of the applicant, to a specific date within 21 days for the reasons stated at the hearing, including but not limited to receipt of additional information from the applicant or others.

VI-F. Investigations:

The Commission, its agents, officers, and employees, may enter upon privately owned land for the purpose of carrying out its duties under this Ordinance and may make or cause to be made such examination or survey as deemed necessary, subject to the Constitutions of both the United States and the Commonwealth.

SECTION VII ORDERS AND DECISIONS

VII-A. Orders and Decisions:

If the Commission determines that the proposed activity does not require the imposition of conditions to preserve and protect the interests of this Ordinance, the applicant shall be so notified in writing.

If, after the hearing, the Commission determines that the proposed activity is significant to one or more interests and values of this Ordinance, the Commission shall vote to issue written Orders of Conditions within 21 days of the close of the public hearing. The Order of Conditions may describe such conditions, safeguards, and limitations on time and use upon such activity in the event that the Commission finds that necessary to protect those interests and values. The Commission may require the Applicant to hire an appropriate

technical expert to monitor the project to ensure compliance with the order of Conditions.

The Commission may choose to issue an Order of Conditions denying a project if it finds that the interests and values of this Ordinance cannot be preserved and protected by the imposition of such conditions, safeguards, or limitations. The Commission shall state the reasons for such denial in the Order of Conditions.

VII-B. Security to Assure Performance:

The Commission may, as a part of its Order of Conditions, require that, in addition to any security required by any other City or State Board, Commission, agency, or officer, the performance and observance of the conditions, safeguards, and limitations imposed under this Ordinance on the applicant and owner be secured by one, or both, of the following methods:

1. Deposit:

By the deposit of money, sufficient to complete the work as proposed, to secure performance of the conditions and observance of the safeguards of such Order of Conditions. Such security, if filed or deposited, shall be approved as to form and manner of execution by City Solicitor or the City Treasurer.

2. Land Restrictions(s):

By an executed and properly recorded (or registered, in the case of registered land) conservation restriction, easement, or other covenant running with the land. This method shall be used only with the consent of the applicant.

VII-C. Duration of Orders:

All Orders of Conditions shall expire three (3) years after the date of issuance. The Commission may extend an Order for one (1) or more periods of up to three (3) years each, upon the request of the applicant. The request for an extension of an Order of Conditions shall be made to the Commission at least 30 days prior to expiration of the Order of Conditions. The Commission may grant only two (2) extensions for an individual Order of Conditions.

No activity governed by an Order of Conditions shall be performed unless and until all permits, approvals, and variances required by the Ordinance of the

City shall have been obtained, such Order of Conditions or notification shall have been recorded or registered at the Southern Essex District Registry of Deeds or in the Southern Essex District of the Land Court Department, and all applicable appeal periods have expired. The Commission shall have the right to record or register its Order of Conditions with said Registry or Registry District. In the event that an Order of Conditions issued pursuant to this Ordinance is identical to a final Order of Conditions issued pursuant to the provisions of the Act, only one such order need be recorded or registered.

VII-D. Modifications, Amendments, Revocations:

The Commission shall have the power (on its own motion or upon the petition of the applicant, or any person interested) to modify, amend, or revoke an Order of Conditions. In revoking an Order of Conditions, the Commission shall officially notify the interested parties through certified mail and hold a public hearing within 21 days of the notification date. A modification is a minor or insignificant change that will not result in an adverse impact to wetland resource areas and/or interests protected by this Ordinance. An amendment is a change of significant magnitude that will require the imposition of additional conditions to ensure adequate protection of wetland resource areas and/or interests protected by this Ordinance. In the case of an amendment to an Order of Conditions, the Commission shall have the discretion to decide if a public hearing is warranted. This decision shall be based on the potential impact of the proposed work and its effect on the ability of the identified wetland resource areas to provide those interests as defined under the Act and Ordinance. If the Commission determines that a public hearing is warranted, the Applicant shall comply with the publication and abutter notification requirements as required for new filings. No public hearing is required for a modification to an Order of Conditions. Written notification to the applicant by certified mail is required in all cases where the Commission initiates a modification, amendment, or revocation of an Order of Conditions. The Applicant shall record modified and amended Orders of Conditions prior to the commencement of authorized work under the Order.

SECTION VIII CERTIFICATES OF COMPLIANCE

The Commission or its designee shall, upon receiving a written request, inspect the resource areas where the activity governed by an Order of Conditions was carried out and issue a Certificate of Compliance (or Partial Certificate of Compliance) to the owner of the property, applicant, or applicant's representative, in a form suitable for recording or registering, if it shall determine that all of the activity(ies), or portions thereof, limited thereby have been completed in accord with said Order. If the Order contains conditions that continue past the completion of the work, such

as maintenance or monitoring, the Certificate of Compliance shall specify which of the conditions shall continue. The Applicant shall record Certificates of Compliance.

If the Commission determines that the work was not performed in compliance with the Order, it may refuse to issue a Certificate of Compliance. The written refusal shall be issued within 21 days of the receipt of a request for a Certificate of Compliance and shall specify the reasons for denial.

The Certificate of Compliance shall be recorded or registered at the Southern Essex District Registry of Deeds or in the Southern Essex District of the Land Court Department. Certification of recording shall be sent to the Commission.

SECTION IX RESPONSIBILITY FOR COMPLIANCE

After the recording of a Notice of Violation or Order, any person who purchases, inherits, or otherwise acquires real estate upon which work has been done in violation of the provisions of this Ordinance or in violation of any Order issued under the Ordinance shall forthwith comply with any such Order or restore such land to its condition prior to any such violation; provided, however, that no action, civil or criminal, shall be brought against such person unless such action is commenced within three years following the recording of the deed or the date of the death by which such real estate was acquired by such person.

SECTION X RULES AND REGULATIONS

The Commission shall be empowered to establish Rules and Regulations to govern its affairs, including but not limited to fees, definitions, use of consultants, security to assure performance, performance standards for work proposed on the barrier beach, and such other information the Commission deems necessary to discharge its responsibilities. After due notice and public hearing, the Commission may promulgate such rules and regulations to effectuate the purposes of this Ordinance, by a majority vote of the duly appointed members.

Failure by the Commission to promulgate such rules and regulations, or a legal declaration of their invalidity by a court of law shall not act to suspend or invalidate the effect of this Ordinance.

SECTION XI ENFORCEMENT, INVESTIGATIONS, VIOLATIONS

In accord with the provisions of G.L. c. 40, §§ 21D and 31 as well as every other authority and power that may have been or may hereafter be conferred upon it, the City may enforce the provisions of this Ordinance, restrain violations thereof, and seek injunctions and judgments to secure compliance with its Orders of Conditions. Without limiting the generality of the foregoing:

XI-A. Any person who violates any provision of this Ordinance or of any condition or a permit issued pursuant to it may be ordered to restore the property to

its original condition and take other action deemed necessary to remedy such violations, or may be fined, or both. Any person may be fined or issued a stop work order or an order to restore for an unauthorized alteration of an area subject to protection under the Ordinance or for failing to restore illegally altered land to its original condition or failing to comply with an order issued pursuant to the Ordinance. Fines may be levied pursuant to G.L. c. 40, § 21. Each day or portion thereof during which a violation continues shall constitute a separate offense; if more than one, each condition violated shall constitute a separate offense. This Ordinance may be enforced pursuant to G.L. c. 40, § 21D, by a City police officer, other persons having police powers, Conservation Commissioners, or the Conservation Administrator. The penalties for violations of this Ordinance or regulations promulgated hereunder may be assessed as follows:

<u>Violation</u>	<u>Penalty/Violation/Day</u>
Alteration of any wetland resource area	Up to \$ 300
Violation of any Order of Conditions	Up to \$ 300

XI-B. In the event of a violation of this Ordinance or of any order issued thereunder, the Commission or its agents may issue a stop work order to the owner, the applicant, or the applicant's agent by certified mail, return receipt requested, or by posting the same in a conspicuous location on said site. Any person who shall violate the provisions of a stop work order shall be deemed in violation of the Ordinance; but the failure of the Commission to issue a stop work order for any reason shall not prevent the City from pursuing any other legal remedy at law or in equity to restrain violations of this Ordinance or promulgated regulations and to secure compliance with its Orders.

XI-C. The City shall be the beneficiary of all fines imposed on account of the violation of this Ordinance or promulgated regulations in order to defray the expense of enforcing the same.

XI-D. Upon request of the Commission, the Mayor and City Solicitor shall take such legal action as may be necessary to enforce this Ordinance or promulgated regulations and permits issued pursuant to it.

XI-E. Upon recommendation of the Commission, the Mayor may employ Special Counsel to assist the Commission in carrying out the legal aspects, duties, and requirements of this Ordinance and promulgated regulations.

SECTION XII CONSULTANT SERVICES

Upon receipt of an application for a Notice of Intent, Request for Determination of Applicability, Abbreviated Notice of Resource Area Delineation or at any time proceeding the Commission's issuance of a Certificate of Compliance, the Commission is authorized to require an applicant to pay a fee for the reasonable

costs and expenses borne by the Commission for specific expert engineering and other consultant services deemed necessary by the Commission to come to a final decision on the application. This fee is called the "consultant fee." Consultant services may include, but are not limited to, performing or verifying the accuracy of resource area survey and delineation; analyzing resource area functions and values, including wildlife habitat evaluations, hydrogeologic and drainage analyses and monitoring; and researching environmental or land use law. The Commission may require the payment of the consultant fee at any point in its deliberations prior to a final decision.

If a revolving fund for consultant fees is authorized, the applicant's fee shall be put into such revolving fund and the Commission may draw upon that fund for specific consultant services approved by the Commission.

The exercise of discretion by the Commission in making its determination to require the payment of a consultant fee shall be based upon its reasonable finding that additional information acquirable only through outside consultants would be necessary for the making of an objective decision.

The Commission shall waive the consultant fee for a permit application filed by the City.

SECTION XIII CAPTIONS AND SEVERABILITY

The captions used herein are for convenience only and are expressly intended to have no legal or binding significance. The invalidity of any section or provision of this Ordinance shall not invalidate any other section or provision thereof, nor shall it invalidate any Order of Conditions or decisions that have previously become final.

Guidelines for Plum Island applications

These guidelines are not intended to replace the Wetlands Protection Act or the Newburyport Wetlands Ordinance or any related Regulations. They are meant only to assist in applicants in preparing a filing for a project and to assist the Conservation Commission and Administrator in reviewing proposed projects. These guidelines are not meant to cover all possible projects on Plum Island, but only the more typical projects which may be proposed.

It is up to the applicant to present the project in a complete manner following the requirements of the Massachusetts Wetlands Act and Regulations and the Newburyport Wetlands Ordinance and any local Regulations adopted by the Commission.

It should be noted that standards for projects within the V-zone or A/O-zone are much more stringent than for other zones on Plum Island, and that these Guidelines do not specifically reference these stricter standards.

If, after the plans are submitted to the Commission, another City Department – such as Zoning, Building or Board of Health – requires some change to the plans, new plans should be submitted to the Commission. If an Order of Conditions or a Determination has already been issued by the Commission, the applicant may be required to submit an Amended filing.

Project plans

Project plans should have an identifiable reference name and should be dated and signed and should include the address of the property on which the project is proposed.

The project site should be located from the CDM map as well as from the Assessor's map. The CDM map is available in the Conservation Administrator's office. The project plan should indicate the flood zone as determined from the CDM map.

Project plans should clearly show all dimensions – horizontal and vertical – of the existing building and the proposed building.

Project plans should clearly show what parts of the existing building are to be demolished and which parts of the existing building are to be replaced and which parts of the new building are to be added.

Project plans should indicate where construction material and debris will be stored. This should not be on a portion of dune covered by natural vegetation such as beach grass.

Project plans should show the location of any natural vegetation such as beach grass.

The 25%/50% rule

This rule is used to determine when an existing building should be placed on pilings. This rule is a compromise between the desirability of having all houses on Plum Island built on pilings and the practicality for smaller projects. The intent is that if a project is large enough that the building should be placed on pilings.

If a building is already completely on pilings, or is proposed to be completely on pilings, the 25%/50% rule does not apply.

Determining space for the 25% rule

The Newburyport Wetlands Ordinance refers to a 25% increase in square-footage as one of the triggers for placing an entire house on pilings. The Commission is choosing to interpret this by using a volume computation in determining this aspect of the measurement which would result in a house being placed on pilings. The Commission feels that this is a fairer and more equitable measurement to use, and that it is within the spirit of the Ordinance.

When a proposal is for increasing the size of the house the calculation for increase in space should be based on volume of the existing and proposed house. The volume of a house is the volume enclosed within the roof, the solid exterior walls and the first floor which is higher than 2 feet above maximum ground level and higher than 2 feet above flood level. If there is living area in the existing house below this elevation and is designated as such by the Assessor's Office, the volume of the room above that designated area may be included in the volume calculation. Three season porches and attached fully enclosed sheds may be included in the volume calculation, but screened-in porches and attached garages may not be included in the volume calculation.

The applicant should show, in writing, what components went into the calculations and reference specific plans when presenting the calculations.

Determining cost for the 50% rule

When a proposal is for expanding the size of an existing house or for a renovation of an existing house, the applicant should present either:

A licensed Appraiser's valuation of the existing house (structure only) and the same licensed Appraiser's valuation of the proposed house. Both evaluations should be signed by the appraiser and both should reference the specific plans from which the evaluations were made. The evaluations should include a letter from the Appraiser explaining the methodology used in making the evaluations.

Or:

The assessed value of the house (structure only) from the Assessor's office and a cost estimate from a licensed Builder for the proposed work. The proposed work should include the cost of any demolition and removal of debris. The cost estimate, signed by the licensed Builder should reference a specific plan.

Appraisals and cost estimates do not include house-hold appliances and fixtures.

Applicant should be aware at the time of filing that any unforeseen problems with an existing structure or proposed structure may affect the appraised value or cost estimates, and may require a new filing and may require the house be placed on pilings. If such a problem is found during demolition or construction, it should be reported immediately to the Commission or its agent, so that it can be determined if a new filing is necessary.

Note: we should have some flexibility with this so that a very minor problem does not hold up a project unnecessarily.

Fences

Any proposed fence should be at least 40% open and the bottom of the fence should be at least 2 inches above grade. Plans should show where the fence is to be located and should denote locations of fence posts. Plans should show a diagram or photograph of a typical section of the fencing to be used.

Lattices

Any proposed lattice around pilings of a proposed building should be at least 40% open. Any lattice work should be within the footprint of the building. Plans should show a diagram or photograph of a typical section of the fencing to be used.

Driveways and parking areas

Any proposed driveway or parking area may be constructed only with gravel, crushed stone or shells. No more than 6 inches of sand should be excavated for construction of a driveway or parking area. The lateral limits of the driveway or parking area may be surrounded by timber or stone measuring no more than four inches by six inches.

Linpac may be used in construction of a driveway or parking area if it can be shown that use of Linpac will not cause any additional flooding on to adjoining property.

In-ground structures

In-ground structures which may be permitted, determined on a site-by-site basis, are:

Concrete pads to support stairs, gas tanks, etc. may be allowed, but should be limited to the minimum required size.

A utility shaft for a house which is built completely on pilings. A utility shaft may be up to 100 square feet, measured from the exterior of the walls, and should meet all FEMA building standards. If a utility shaft requires a bulk-head entry, the size of that entry is included in the 100 square foot limit.

Borders for driveways or parking areas, provided that the border is no more than 4 inches by 6 inches.

In-ground cisterns and swimming pools and new solid foundations are specifically not allowed.

Decks

If construction material and debris will not be stored on a vegetated portion of the dune, the Conservation Administrator may sign off on a building permit for removal and replacement of deck planking or railings. If, after work has commenced, it is found that additional work is required, the applicant should contact the Conservation Administrator to see if an RDA or an NOI will need to be filed.

If construction material and debris will not be stored on a vegetated portion of the dune, replacement or repair of a deck which involves structural elements such as joists or posts, and which does not alter the footprint of the existing deck and which does not involve work in the ground will require an RDA.

A new deck or increasing the footprint of an existing deck or work on a deck involving work in the ground will require an NOI.

Sheds

Sheds should be elevated at least two feet above ground level and at least two feet above flood level.

Septic system repair

If a septic system requires an upgrade or repair related to a building project, the plans for the project should include the location where any such work is to be done.

Exterior work – roofing

If construction material and debris will not be stored on a vegetated portion of the dune, the Conservation Administrator may sign off on a building permit for removal and replacement of roofing material – such as roofing shingles.

If the rafters or sheathing need replacement and that replacement is going to be in the same configuration/silhouette as the existing rafters and sheathing, the applicant may file an RDA. Otherwise the applicant should file an NOI.

Exterior work – siding

If construction material and debris will not be stored on a vegetated portion of the dune, the Conservation Administrator may sign off on a building permit for removal and replacement of existing windows, doors and siding. This does not include removal/replacement of building sheathing or structural elements.

Interior work

If the proposed interior work does not include any structural changes, the Conservation Administrator may sign off on a Building Permit. If any interior structural changes are proposed, a Notice of Intent should be filed.

Elevation above ground level and elevation above flood level

The first floor of a building should be two feet above the highest ground level within the footprint of the building (existing and proposed) and two feet above the flood level as defined by the CDM map. The first floor of a building is assumed to be at the bottom of the structure (joists) supporting the floor.

The Commission reserves the right to have a higher elevation required if the topography near the proposed building warrants.

Landscaping

Sod lawns would not be permitted.

Replacing of natural vegetation such as beach grass by other vegetation or any structure would require a Notice of Intent.

APPLICABLE LAWS AND REGULATIONS

FEDERAL STATUTES

Migratory Bird Treaty of 1918	16 U.S. Code 703
Coastal Zone Management Act	16 U.S. Code 1451
Endangered Species Act	16 U.S. Code 1531
Coastal Barrier Resources Act	16 U.S. Code 3502
Rivers and Harbors Act of 1899	33 U.S. Code 401
Water Pollution Control Act (Clean Water Act)	33 U.S. Code 1251
Marine Protection, Research, and Sanctuaries Act	33 U.S. Code 1401
Marine Plastic Pollution Research and Control Act of 1987	33 U.S. Code 1901
National Flood Insurance Act	42 U.S. Code 4001
National Environmental Policy Act	42 U.S. Code 4321
Americans With Disabilities Act	42 U.S. Code 12101

STATE STATUTES, REGULATIONS AND EXECUTIVE ORDERS

Landowner Liability Limitations	Mass. General Laws (M.G.L.) Chapter 21, §17c
Coastal Zone Management Act and Regulations	M.G.L. Chapter 21A, §4A 301 Code of Mass Regulations (CMR) 20.00
CZM Federal Consistency Regulations	301 CMR 21.00
Clean Water Act and Regulations	M.G.L. Chapter 21A, §42 314 CMR 1-15.00
Sanitary Code/Title V Regulations	310 CMR 15.00

Handicap Access Act and Regulations	M.G.L. Chapter 22, §13A 521 CMR 2-3.00
MA Environmental Policy Act and Regulations	M.G.L. Chapter 30, §§61-62H 301 CMR 11.00
Areas of Critical Environmental Concern Regulations	301 CMR 12.00
Motor Vehicles Act and Regulations	M.G.L. Chapter 90 540 CMR1-19.00
Motorboats and Other Vessels Act and Regulations	M.G.L. Chapter 90B 323 CMR 1-5.00
Public Waterfront Act and Regulations	M.G.L. Chapter 91 310 CMR 9.00
Marine Fish and Fisheries Act and Regulations	M.G.L. Chapter 130 322 CMR 1-12.00
Coastal Wetlands Restriction Act and Regulations	M.G.L. Chapter 130, §105 302 CMR 4.00
Inland Fisheries, Game and Other Natural Resources Act and Regulations	M.G.L. Chapter 131 321 CMR 1-9.00
Wetlands Protection Act and Regulations	M.G.L. Chapter 131, §40 310 CMR 10.00
Endangered Species Act and Regulations	M.G.L. Chapter 131A 321 CMR 10.00
Ocean Sanctuary Act and Regulations	M.G.L. Chapter 132A 302 CMR 5.00
Pesticide Control Act and Regulations	M.G.L. Chapter 132B 333 CMR 1-11.00
Building Standards and Regulations	M.G.L. Chapter 143 248 CMR (Plumbing) 521 CMR 2-3.00 (Architectural Access Board) 780 CMR 1-34.00 (Building Code, inc. floodplain)

MA Historic Commission Regulations	950 CMR 70-71.00
Crimes Against the Person	M.G.L. Chapter 265
Crimes Against Property	M.G.L. Chapter 266
Crimes Against Public Health	M.G.L. Chapter 270

Executive Order No.149: Flood Insurance Coordination (1978)

Executive Order No. 181: Barrier Beaches (1980)

Executive Order No. 190: Regulations of Off-Road Vehicle Use on Public Lands Containing Coastal Wetlands Resources (1980)

LOCAL

City of Newburyport ordinances, by-laws, regulations, rules, policies and guidelines covering the following:

Zoning
Wetlands
Waterways
Animal Control
Loitering
Health

PLUM ISLAND PUBLIC ACCESS PLAN



Prepared for:

Department of Conservation and Recreation
Boston, MA

Prepared by:



August, 2006

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1.0 INTRODUCTION

In 2006, the City of Newburyport and the Town of Newbury requested funding from the State Seaport Council to undertake a public access planning study for the residentially developed portion of Plum Island. The Seaport Council subsequently authorized the state Division of Conservation and Recreation to prepare the study. The purpose of the study is to identify potential access routes to Plum Island beaches and the Newburyport Plum Island Basin and to develop conceptual plans for the Plum Island Point Parking lot and restroom facility and the Newbury Center Parking lot and proposed lifeguard station, viewing platform and restroom facility.

2.0 GEOGRAPHIC SETTING AND STUDY AREA

Plum Island is a nine mile long barrier island located just offshore of the Merrimack River estuary in northeastern Massachusetts (See Figure 1, Project Locus). The island is connected to the mainland in only one location at the Plum Island Turnpike which crosses through the City of Newburyport and Town of Newbury. The Bay Circuit Trail which, when complete, will extend some 200 miles from northeastern to southeastern Massachusetts, currently terminates in Plum Island and provides bicyclists and walkers an alternative means of access to the island. Captains Fishing Parties has an excursion vessel operation located at the northern tip of the island. The only other boat access on the island is a small ramp on the Plum Island/Parker River side of the island in the Parker River National Wildlife Reservation which is used by small craft such as kayaks and canoes.

The island is comprised of four communities which include from north to south, Newburyport, Newbury, Rowley and Ipswich. The northern tip of the island in the City of Newburyport forms the entrance to the Merrimack River from the Atlantic Ocean. At its southern tip in the Town of Ipswich, the island forms the entrance to the mouth of the Ipswich River. The Atlantic Ocean lies to the east and the Plum Island and Parker Rivers which contain significant tidal flats and salt marsh areas lie to the west. The northern portion of the island is forked and forms a Basin that contains salt marsh, sandy beaches and eelgrass areas (see Figure 2, Plum Island and Surrounding Environment).

The northern third of the island, which is the Study Area, is primarily residentially developed with some commercial uses such as retail stores, restaurants and lodging places. The southern two thirds of the island, which is owned by the state and federal governments, is an important natural and cultural resource which remains in its natural state.

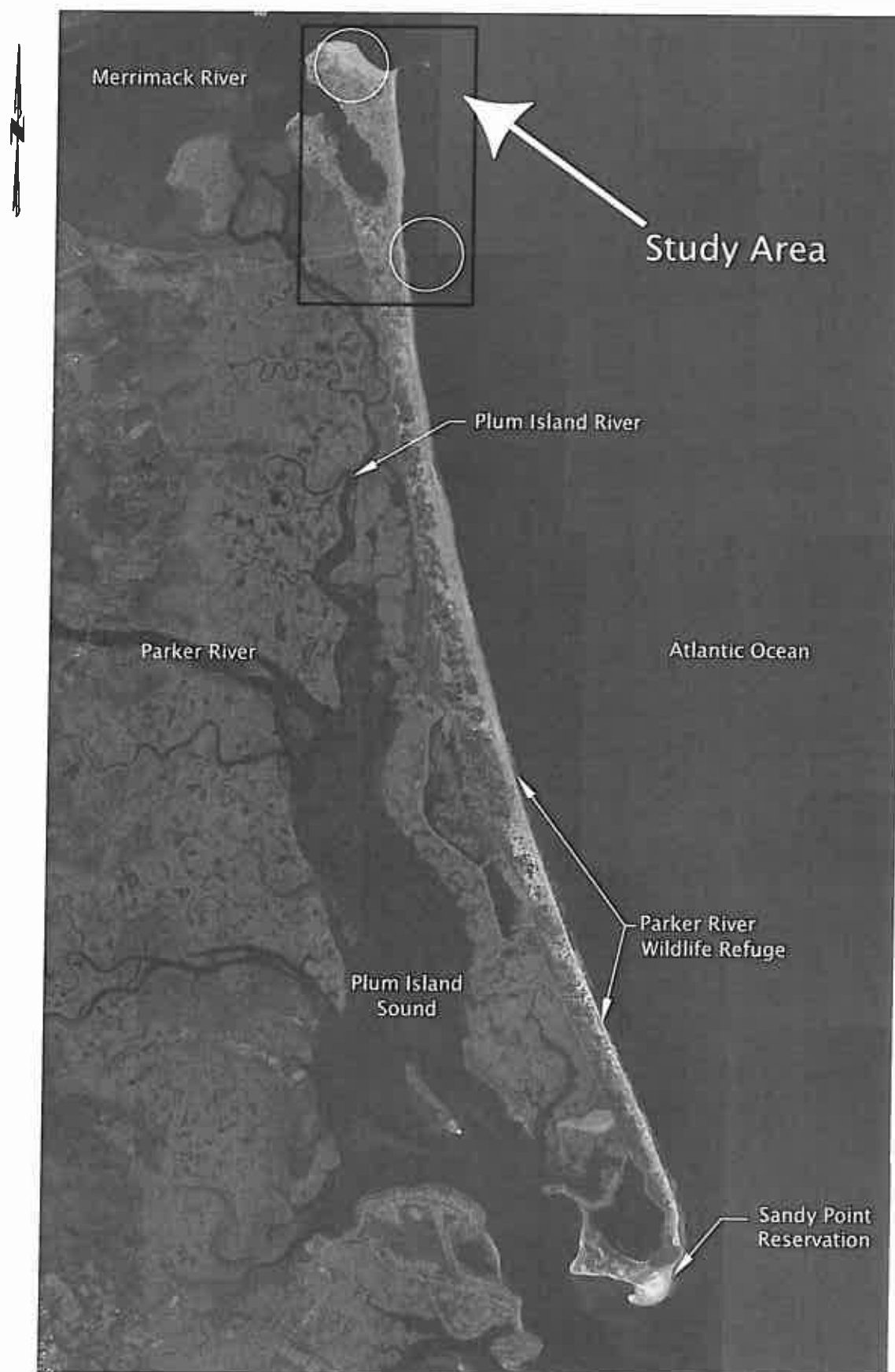


Figure 2
PLUM ISLAND AND SURROUNDING ENVIRONMENT

The island is located along the Atlantic Flyway and due to its unique natural environment, is of special significance to waterfowl and shorebirds. Hundreds of thousands of birdwatchers and other nature enthusiasts from all over the country visit the island's public parks on an annual basis.

The closure of the federal and state-owned beaches (typically during the months of April through July) to protect the nesting habitat of the piping plover places enormous pressure on the northern residential portion of the island as visitors seek alternate locations for reaching the beach and the Atlantic Ocean.

3.0 CULTURAL AND CIVIC CONTEXT

In the early 1800's, the island was connected to the mainland by a bridge and began to develop into a summer resort destination with streets, a trolley system, hotels, restaurants and dockage for visiting steamships. The notoriously treacherous conditions at the mouth of the Merrimack River spurred the need for life saving facilities which formally began in the mid to late 1800's when the federal government constructed a Life Saving Station on the Island. These facilities were later replaced with a U. S. Coast Guard Station that was constructed on Plum Island Point in the 1930's/1940's. In the 1970's the Coast Guard Station was moved off the island to Newburyport along the Merrimack River on Water Street where it remains today.

Starting around the 1940's, summer homes on the island began to be converted into year round residences which put pressure on the existing well water and septic systems. During the 1970's and 1980's development pressures increased as many homes were expanded which eventually led to the failure of many septic systems. In the late 1990's plans were developed to provide public water and sewer systems to the island. Newbury and Newburyport voted to appropriate funding in 2000 and the work was begun in 2004. The water and sewer project is still ongoing and is expected to be completed by 2007. Legislation that funded the water and sewer project also placed a moratorium on new commercial development. There is one hotel located on the island, one service station, a few restaurants and other commercial establishments.

3.1 State and Federal Government

As noted, the state and federal government own large tracts of land in the southern portion of the island. The federal government owns the 4,600 acre Parker River National Wildlife Refuge which offers bird watching, trails and beach coming activities on its six+ miles of sandy beaches and dunes along the Atlantic Ocean as well as tidal creeks, salt marshes and salt panes along the western side of the island. The state Division of Conservation and Recreation owns the 77-acre Sandy Point

Reservation located beyond and south of the Refuge which contains beaches and walking paths.

Access to the federal and state lands is via a gated entrance on Sunset Drive which for a fee leads to a paved road extending the remaining length of the island. Restricted parking, walkways and foot trails provide access to beaches. To protect the sensitive ecosystem, visitors are required to use existing marked paths and are not allowed to cross the extensive sand dunes. The Refuge also contains viewing platforms and observation towers.

The federal government also owns about 63 acres of land on the northern tip of the island which was formerly used as the Coast Guard Life Saving Station.

3.2 Non Profit Organizations

There are several active non profit organizations involved in preserving and enhancing the unique quality and character of the island. These organizations include the Plum Island Tax Payers Association (PITA) which works to improve the quality of life on the island, undertakes fundraising, provides public information and holds community meetings in their hall located on Northern Boulevard; the Friends of Parker River National Wildlife Refuge which assists the federal government in public awareness of conservation and resource management goals for the Refuge; the Newbury Beach Committee, formed in 2002, which is developing a beach management plan and is involved in fundraising and dune restoration and grass planting activities; the Friends of Plum Island Lighthouse which maintains the City of Newburyport-owned Plum Island Coast Guard building under a lease agreement; and other recreational organizations such as the Plum Island Surfcasters which was founded in 1957 and offers educational programs for children and adults.

4.0 REGULATORY CONTEXT

Plum Island is a barrier beach which contains coastal dunes, dune grass, salt marsh areas, tidal creeks and mudflats and an abundance of waterfowl and wildlife including the endangered piping plover birds.

In Massachusetts, barrier islands and salt marshes receive special protection and any proposed development of these resources must abide by strict guidelines. Because most of the residential structures on the island were constructed prior to the promulgation of the state regulations governing these special resource areas, home owners are allowed to expand and re-construct their residences within certain development guidelines. Over the past several years both the Town of Newbury and the City of Newburyport have enacted wetland regulations that require new

structures to be supported on pilings and elevated at least 2 feet above existing flood levels to allow the natural sand movement and dune formation to occur.

Projects proposed in these resource areas must file applications with the local Conservation Commission in the respective municipalities within which the work is being proposed.

5.0 PUBLIC FACILITIES

5.1 Parking Areas

There is a fee-based paved, public parking lot located at the northern tip of the island which is owned and operated by the City of Newburyport. The parking lot has a small ticket booth and can accommodate approximately 150 vehicles including patrons using the adjacent playground.

There is a public parking lot located at intersection of Plum Island Boulevard and Northern Boulevard which is owned and managed by the Town of Newbury. There are also several private, fee based parking lots located near the Plum Island Center which together provide 100- 200 parking spaces at rates that range from \$2.00 to \$10.00 per day.



Newburyport Parking Lot



Newbury Center Parking Lot

5.2 Parks

In addition to the previously mentioned Parker River Wildlife Refuge and Sandy Point Reservation, there is also a playground, the Sawyer Memorial Park, located at the northern end of the island adjacent to the City of Newburyport Parking Lot. The playground was constructed by PITA within the last few years and contains picnic tables, slides, swings, benches and a shade structure. There is also a small passive recreational area, the Father Sears Park located close the Refuge which is used for sitting and viewing the natural environment.

5.3 Public Access Structures

A new 375 linear foot timber, pile supported boardwalk was installed along the northeast portion of the island in 2005-2006. Significant areas around the walkway, which were previously used as paths to the beach, have now filled in with sand and beach vegetation.



Sawyer Memorial Park



Plum Island Point Boardwalk

5.4 Restrooms

There are very limited public restroom facilities within the Plum Island Study Area. At the northern portion of the island in the City of Newburyport parking lot there is a single story, 484 square foot (sf), masonry, restroom facility containing five stalls and two urinals that is in need of replacement. There is also usually one or two porta potties placed adjacent to the building during summer months. The Newbury Center Parking lot contains two handicap porta potties and six regular porta potties.



City of Newburyport Restroom Facility



Newbury Center Porta Potties

5.5 Other

The City of Newburyport is acquiring the former Parker River Wildlife Office and Maintenance Building located at Plum Island Point. The City will use the facility for a small police and fire substation, a lifeguard station and public restrooms. The building will require renovations to accommodate these uses and is outside the scope of this study.



Parker River Wildlife Office

6.0 PUBLIC ACCESS PLAN

As stated in Section 1.0, the City of Newburyport and the Town of Newbury requested funding from the State Seaport Council to undertake a public access planning study for the residentially developed portion of Plum Island. The purpose of the study is to identify existing and potential improved access routes to Plum Island beaches and Plum Island Basin and to develop conceptual plans for the Newburyport Plum Island Point Parking lot and restroom facility and the Newbury Center Parking lot and proposed lifeguard station, viewing platform and restroom facility. The following sections describe the proposed public access plan including identification of and prioritization for activating individual public access ways; and a conceptual layout of the proposed building and cost estimates for suggested improvements.

6.1 Public Access Objectives

The major objectives of the Plum Island Public Access Plan is to identify appropriate locations for public access to the beach and to provide a priority system for undertaking improvements to activate the various access paths with surface treatment and signage including emergency vehicular access. The Plan also provides schematic designs and preliminary cost estimates for the development of a new life guard station including public restrooms and a viewing platform as well as site improvements at the Newbury Center parking lot and renovation of the existing restroom facility, recommendations for a future restroom facility, re-striping of the parking lot and installation of fencing at the Newburyport Plum Island Point Parking Lot to control access and segregate users of the playground from users of the beach.

6.2 Public Walkways

The Plum Island Beach Company originally laid out the street system on Plum Island in 1920 that exists today. Many of the rights of way extend to the coastline providing public access to the beaches, the Atlantic Ocean and the Plum Island and Parker Rivers. Over the years, some of the rights of way have been obstructed by various types of structures or have been used as private yards.



Stair Encroachment

Mobi Mat Demonstration 17th Street



To address the pressures placed on residents resulting from visitors desiring to access the beaches in the northern portion of the island (which is further exacerbated when the federal and state beaches are closed to protect the piping plovers) PITA began a public access initiative in 2004 to identify and open up these public access rights of way. This effort resulted in the marking and signage of nine rights of way

located off of Northern Boulevard. In 2006, the group implemented a demonstration project to determine if a new surface treatment, "Mobi Mats" could successfully be used to maintain a firm walking surface and at the same time allow sand to travel over and under the mat and vegetation to grow alongside. Two 4'6" *Mobi Mats* of different weights were installed in 17th Street in April of 2006. The Mats have held up well to foot traffic while allowing sand to travel over and under the mats. In late summer of 2006, another larger *Mobi Mat* (9'2" wide) will be installed at the Newbury Center parking lot for demonstration use as combined pedestrian/emergency vehicular access. Private fundraising is currently underway to acquire the demonstration mats.

There are over 100 additional rights of way on the island of which 80 have been identified (with the assistance of representatives from PITA) as locations where public access should be encouraged (see Figure 3, Public Access Plan). There are also existing paths that extend from the public roads to the Atlantic Ocean that are not located on rights of way. The goal of the public access plan is to re-activate in priority order important public rights of ways and to abandon paths that extend from the street that are not on rights of way to allow these areas to return to their natural state with sand, dunes and vegetation.

Some of the rights of way will be improved with surface treatment such as the *Mobi Mats* and a signage system will be developed to assist the public in identifying rights of way to be used to travel to their desired destination.



Figure 3
PUBLIC ACCESS PLAN

6.2.1 Priority Setting

The Public Access Plan labels each right of way suggested for improvement using a color-coded system. As noted on the plan, Priority 1 rights of way are those locations where public access already exists, where minor to no existing physical obstructions, exist or the where the rights of way will replace existing public access points that are currently not located on actual rights of way. Priority 2 rights of way are desirable access locations that contain obstructions which are not readily removable, provide access to less desirable beach and basin locations, and/or or require greater effort to construct or maintain (based on potential usage) as compared to Priority 1 locations. Priority 3 rights of way are locations that include obstructed locations and/or are unlikely to be utilized by the public as they lead to undesirable locations such as eelgrass beds, salt marsh or mudflats. Table 1 provides an inventory of the public access rights of way and identifies priorities.

6.2.2 Signage

As part of the initial PITA public access program, signs were installed along the main streets indicating public access locations. A signage plan including a designation system should be developed with consistent design theme for use in designating public access ways throughout the Study Area. "No Access" signs should also be installed in the areas that will be closed to public access. Such efforts will assist visitors in their way-finding and will reduce the use of closed footpaths.

6.2.3 Surface Treatment

As noted, PITA has explored the use of *Mobi Mats* on the public access ways. *Mobi Mats* are lightweight, flexible, polyester mats that come in widths varying from 4'6"; 6'5" and 9'2 inches. The mats have been used in various applications in sensitive beach environments.

There are also roll up timber mats and composite type walkways that have been used in the past in other beach applications. However, these mats, while perhaps less expensive than *Mobi Mats*, are much heavier and not as easily placed and/or removed.

6.3 Emergency Vehicular Access

An important feature of the public access plan is to ensure that there is adequate access with suitable stability for emergency vehicles. At present, emergency vehicles access the beach via the sand path at the Newbury Center Parking lot, at 23rd Street and at Dartmouth Way. The federal government also maintains emergency access ways at Plum Island Point. The public access plan would formalize these access routes with some changes. Emergency Access and public access at the Newbury Center Parking lot will be relocated to the northerly side of the lot as described in 6.4 below.

TABLE 1
Public Access Inventory

(#)	Roadway	Town	Location	Provides Access To	Surveyed	Description	Signs	Priority	Potential Walkway
1	Fordham Way	Newbury	South of House #30 (Temple/Fordham Intersection)	Beach	NO	Well Marked w/Fences	YES	1	W
2	"	"	South of House #37 (Harvard/Fordham Intersection)	Beach	NO	Well Marked w/Fences	YES	1	W
3	Northern Blvd.	"	Town of Newbury Parking Lot	Beach	YES	Path to Beach Path to Beach - Wall	YES	1	W
4	"	"	3rd Street	Beach	YES		NO	1	W
5	"	"	South of House #16, 5th Street	Beach	YES	Path to Beach	NO	1	W
6	"	"	7th Street	Beach	YES	Path to Beach	YES	1	W
7	"	"	11th Street, Goes Thru House #36	Beach	YES	Partially Thru House	NO	1	W
8	"	"	13th Street	Beach	YES	Path to Beach	YES	1	W
9	"	"	South of House #48, 15th Street	Beach	YES	Stairs Washed Out Demonstration Plastic Walkway	YES	1	W
10	"	"	North of House #50, 17th Street	Beach	NO	Location	YES	1	W
11	"	"	North of House #80, 23rd Street	Beach	NO	Public Access - Vehicles (DPW) Possibly Thru Carport - Deck/Stairs	YES	1	W
12	"	"	South of House #86, North of House #84, 25th Street	Beach	NO		NO	2	
13	"	"	South of House #90, 27th Street	Beach	NO	Steps to Beach Possibly Intersects Overhang on Hse #98	NO	2	
14	"	"	South of House #98, 29th Street	Beach	YES		YES	1	W

TABLE 1 (Continued)

15	"	South of House #100, 31st Street	Beach	NO	Path to Beach	NO	2	
16	"	33rd Street	Beach	YES	Path to Beach	YES	1	W
17	"	35th Street	Beach	YES	Path to Beach	YES	1	W
18	"	37th Street	Beach	NO	Easy Access	NO	1	W
19	"	39th Street	Beach	NO	Easy Access	NO	1	W
20	"	41st Street	Beach	NO	Path to Beach	NO	1	W
					Possible			
					Encroachment on			
21	"	43rd Street	Beach	NO	South Side	NO	1	W
22	"	45th Street	Beach	NO	Easy Access	NO	1	W
					Poles on North			
23	"	47th Street	Beach	NO	Side	NO	1	W
24	"	49th Street	Beach	YES	Path to Beach	YES	1	W
25	"	51st Street	Beach	NO	Path to Beach	YES	1	W
26	"	53rd Street	Beach	NO	Path to Beach	YES	1	W
27	"	55th Street	Beach	NO	Path to Beach	NO	1	W
28	"	57th Street	Beach	NO	Path to Beach	NO	1	W
29	"	Grant Street	Gov't Beach	NO	Path to Beach	NO	1	W
		City of			Government Beach	NO	3	
		Newburyport			New Elevated			
30	"	Parking Lot	Beach	YES	Boardwalk to		1	W
		City of			River	YES		
31	"	Newburyport - Plum Island Point	Beach	NO	Access to River	YES	1	W
32	Harbor	South of House #29	Basin	NO	Fencing	NO	1	W
33	Street	76th Street	Basin	NO	Access OK	NO	1	W
	"	Opposite House						
34	Basin	#32, North of House	Basin	NO	Unnamed Access	NO	1	W
35	Street	#27	Basin	NO	Path to Basin	NO	1	W
	"	64th Street			R.O.W., Walk in			
36	Northern	54th Street	Basin/Marsh	NO	Marsh	NO	3	
37	Blvd.	42nd Street	Basin/Marsh	NO	Marsh	NO	3	
	"							

TABLE 1 (Continued)

[illegible]

TABLE 1 (Continued)

56	"	"	Davoi Street	Basin/Marsh	NO	Retaining Wall, Stairs Wood	NO	3
57	"	"	Riverside Street	Basin/Marsh	NO	Rock/Timber Wall, Fence	NO	3
58	"	"	Smith Street	Basin/Marsh	NO	R.O.W. to Walkway - Partially Blocked	NO	3
59	"	Newburyport	Blue Hill Avenue - East Blue Hill Avenue - West F - Street	Basin	NO	Severely Vegetated to Basin	NO	3
60	"	"	"	West to Marsh	NO	West Side Marsh	NO	3
61	"	"	"	West to Marsh	NO	West Side Marsh	NO	3
62	"	"	Flora Street	Basin	NO	Rock Wall, Access	NO	3
63	"	"	G - Street	West to Marsh	NO	Open	NO	3
64	"	"	Gloria Street	Basin	NO	West Side Marsh	NO	3
65	"	"	H - Street	West to Marsh	NO	Marsh	NO	3
66	"	"	Hellaria Street	Basin/Marsh	NO	Open	NO	3
67	"	"	I - Street	West to Marsh	NO	Marsh	NO	3
68	"	"	Iris Street	Basin/Marsh	NO	Marsh	NO	3
69	"	"	J-Street - West Side	West to Marsh	NO	Open	NO	3
70	"	"	Julia Street	Basin	NO	Launching Ramp	YES	2
71	"	"	K-Street - West Side	West to Marsh	NO	Marsh	NO	3
72	"	"	Kate Street	Basin	NO	Open	NO	3
73	"	"	L Street - West Side	West to Marsh	NO	Marsh	NO	3
74	"	"	Louise Street	Basin	NO	Open	NO	3
75	"	"	M-Street - West Side	West to Marsh	NO	Open	NO	3
76	"	"	Martha Street	Basin	NO	Marsh	NO	3
77	"	"	N-Street - West Side	West to Marsh	NO	Marsh	NO	2
78	"	"	Nancy Street	Basin	NO	Good -	NO	2
79	"	"	O-Street - West Side	West to Marsh	NO	Recommended	NO	2
80	"	"	Pauline Street	Basin	NO	Marsh	NO	3
						Marsh	NO	3

6.4 Newbury Center Parking Lot, Life Guard Station, Restrooms and Viewing Platform

The Newbury Center Parking Lot will be redesigned and a new structure constructed to provide life guard, public restroom and public viewing facilities. The proposed improvements are shown on Figure 4, Newbury Center Parking Lot Site Plan.

6.4.1 Site Layout, Parking and Utilities

The parking lot will be slightly reconfigured and the amount of pavement will be reduced by approximately 2,500 square feet. One handicap access parking spot and van unloading area will be provided at the northeastern end of the lot. Two bicycle racks will be installed at the southwestern end of the lot. There is existing electric service nearby and water and sewer service is understood to be provided as part of the ongoing water and sewer project.

6.4.2 Proposed Building and Viewing Platform

The existing life guard trailer used for life guard functions and porta potties will be replaced with a new building which will house handicap accessible restroom facilities as well as life guard facilities including an office and storage for All Terrain Vehicles. A handicap access ramp will be installed to provide access to the structure. An approximately 300 square foot viewing platform will be constructed at the eastern end of the structure. The building will be elevated to ensure that the bottom of the lowest structural member of the building is at least two feet above existing grade. The area underneath the structure, ramp and viewing platform will not be paved. See Figure 5 for conceptual plan view and elevations of the proposed life guard, restroom facility which will be connected to the new public water and sewer system.

6.4.3 Beach Access

As noted, there is an existing beach access that extends from about the middle of the Center Parking Lot edge toward an existing stone groin and the beach.



Newbury Center Existing Access to Beach

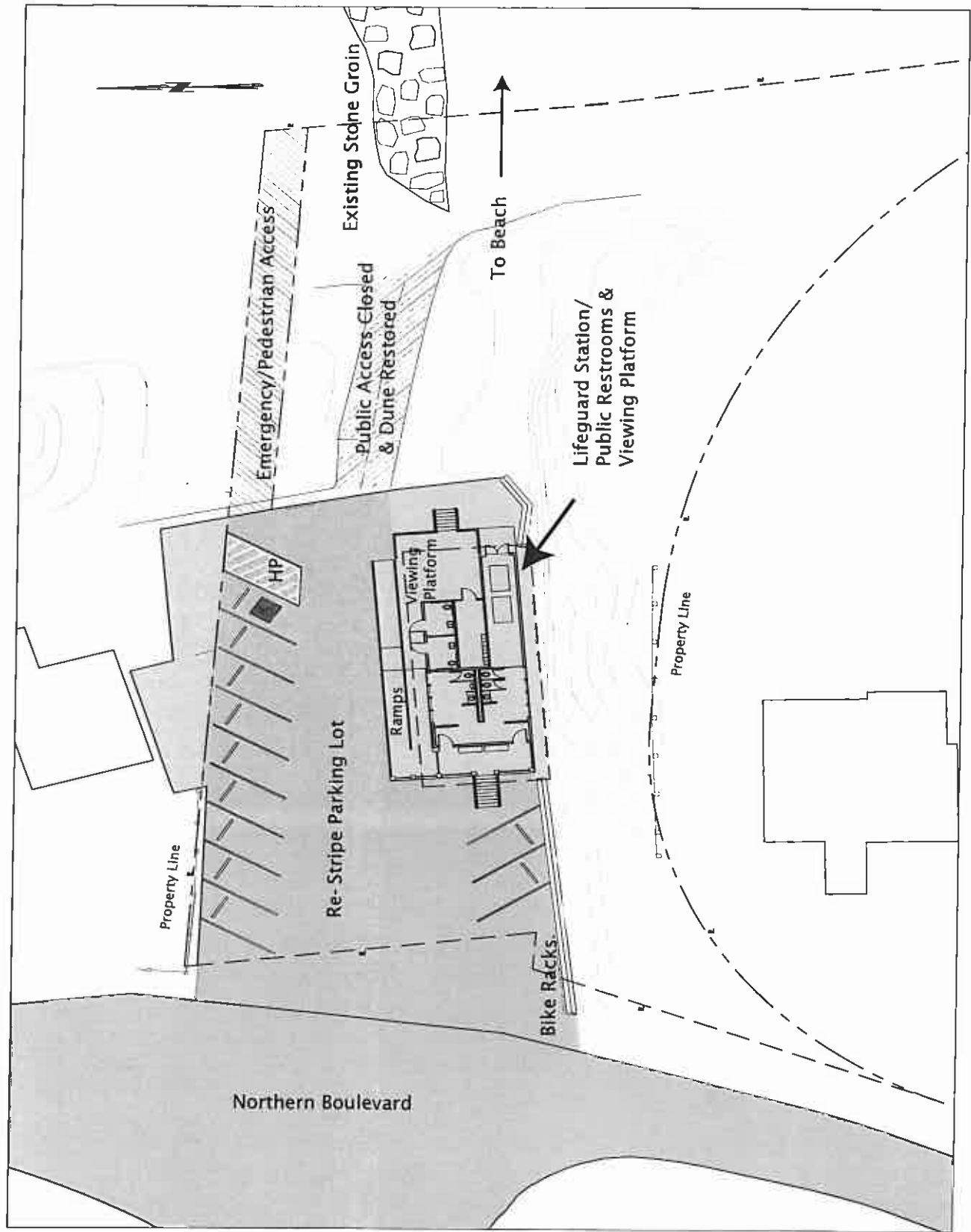


Figure 4
NEWBURY CENTER PARKING LOT SITE PLAN

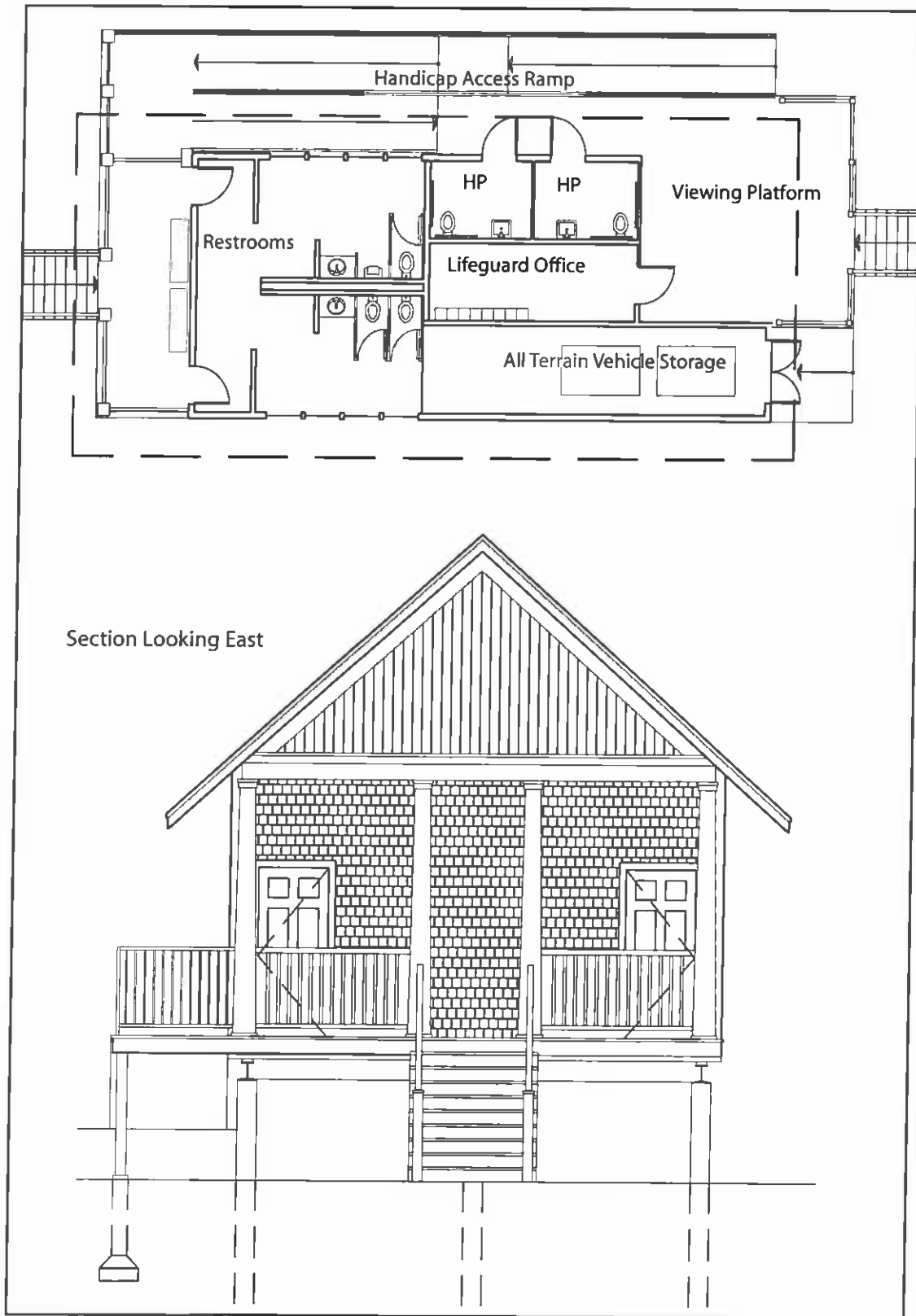


Figure 5
CONCEPTUAL PLAN VIEW AND SECTIONS NEWBURY LIFEGUARD AND RESTROOM FACILITY

The beach access will be relocated to a ten foot wide area on the northeastern end of the parking lot and will be surfaced with a nine +/- foot wide *Mobi Mat* that will allow pedestrian and emergency vehicular access to the beach. The existing pedestrian access will be closed and the area restored to allow the dune to rebuild.

6.5 Newburyport Point Parking Lot and Restroom Facility

Improvements proposed for the Newburyport Parking Lot located at Plum Island Point include re-striping of the parking lot, installation of additional fencing, replacement of the existing ticketing booth and interim improvements to the existing restroom facilities until that facility can be replaced with a new structure. The proposed improvements are shown on Figure 6, Newburyport Parking Lot Site Plan.

6.5.1 Site Layout and Utilities

The existing Newburyport Parking Lot is fenced with a ticket booth and has an entrance off of Point road and an exit at the northern edge of the lot. Parking fees are imposed for all users of the lot except for families using the playground.

The proposed site plan includes a parking lot layout with striping that can accommodate approximately 125 vehicles. A portion of the parking lot is located on property owned by the Commonwealth of Massachusetts which includes an access easement that extends to the communications tower maintained by the federal government.

The proposed fencing will be re-configured to separate the playground parking from the larger, fee based parking lot. Ten parking spaces will be provided at the playground site. By providing the fencing and on site parking, users of the playground can enter the area and park without having to pay a fee at the ticket booth. Access from the playground to the boardwalk will remain in its current condition. The existing ticket booth will be replaced with a 10 foot x 12 foot shed structure. There is existing electrical service to the site and the restroom facility will have modern connections to the proposed water and sewer system.

6.5.2 Restroom Facility

The existing restroom facility at the parking lot is in need of replacement. For the interim however, the facility will be rehabilitated by upgrading the stalls to meet current accessibility requirements and other improvements including replacement of exterior siding, interior walls, floors coverings and plumbing fixtures with materials that are easily maintained and in keeping with the context of the area. A conceptual layout of a replacement facility is shown on Figure 7.

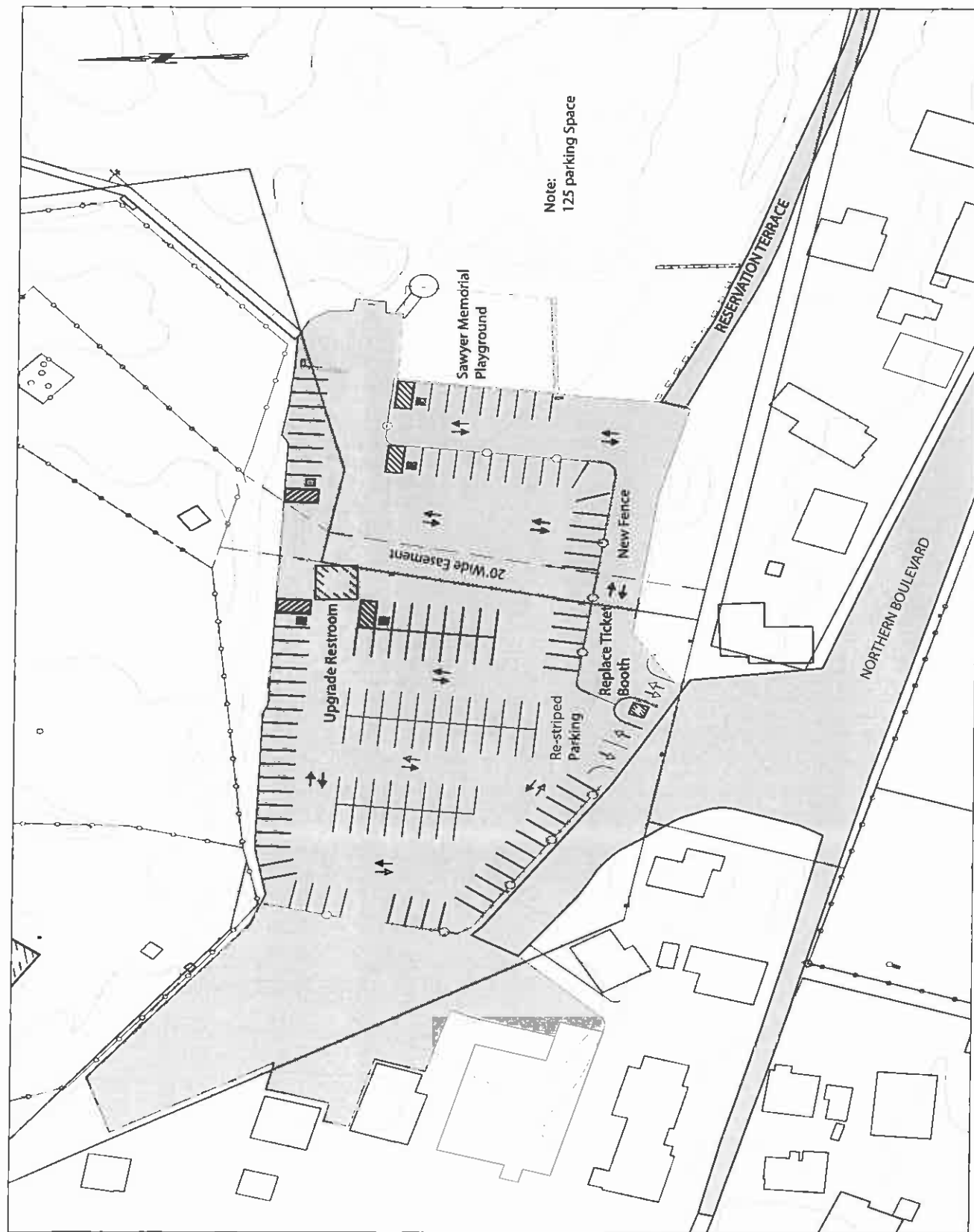
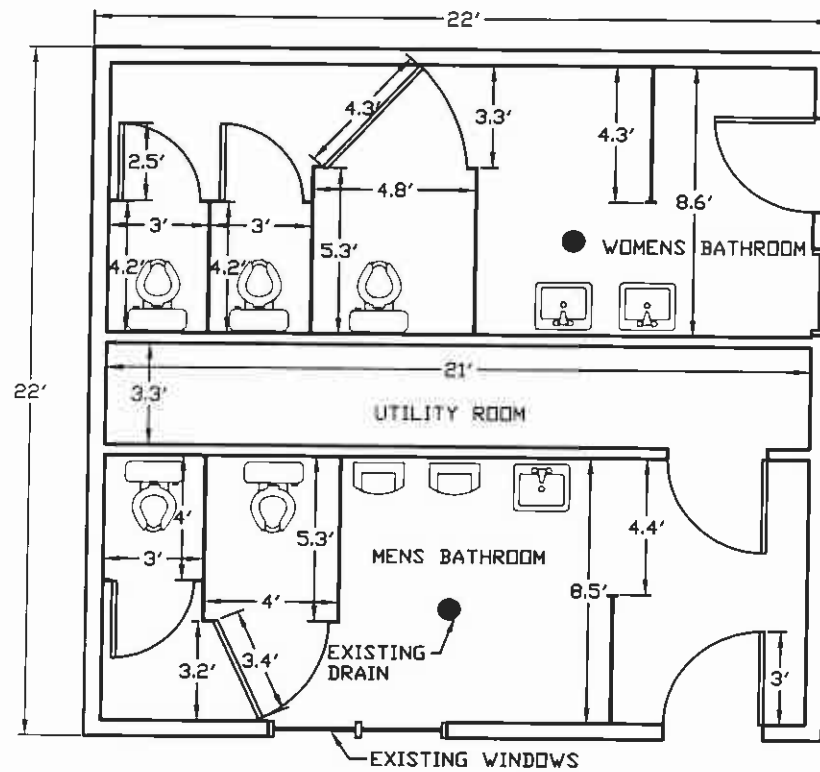
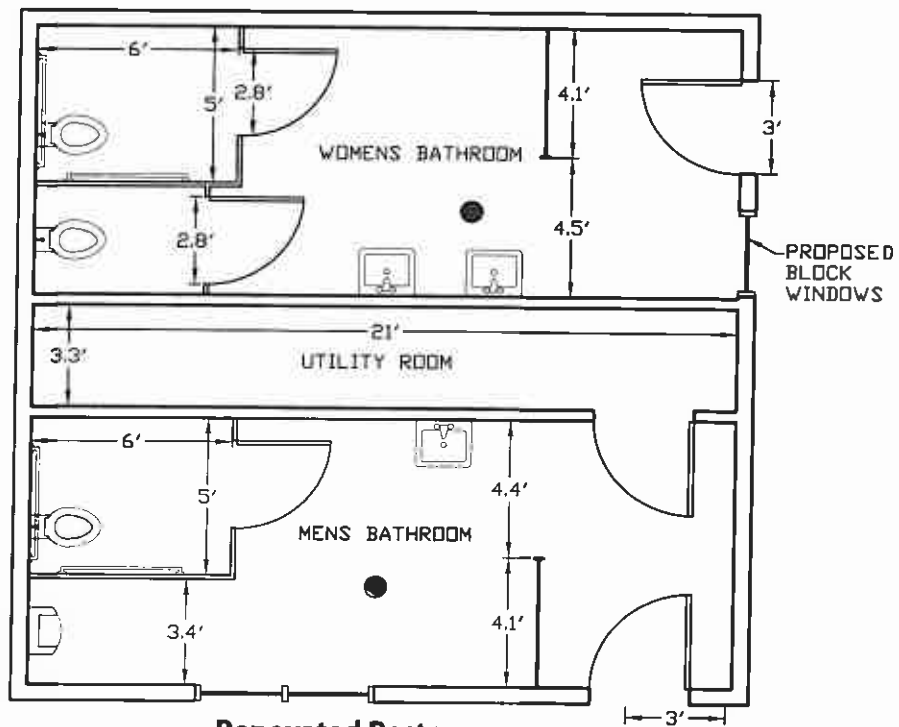


Figure 6
NEWBURYPORT POINT PARKING LOT SITE PLAN



Existing Restrooms



Renovated Restrooms

Figure 7
CONCEPTUAL PLAN VIEW NEWBURYPORT RESTROOM FACILITY

As shown in Figure 7, upgrading the existing restroom facility for universal access results in the elimination one stall each in the men and ladies rooms and one urinal in the men's room. The facility will be connected to existing sewer and water.

7.0 COST ESTIMATES

Table 2 provides schematic cost estimates for the public access improvements described in this report.

Table 1
Plum Island Public Access Improvements

<i>Item No.</i>	<i>Location of Work</i>	<i>Item of Work</i>	<i>Unit</i>	<i>Cost</i>	<i>Total</i>
1	Plum Island	Public Access/Mobi-Mats (25 Locations)	8610 SF	\$ 10.89	\$ 93,762.90
		Signage	30 Each	\$ 200.00	\$ 6,000.00
2	Newbury	Restroom/Lifeguard Building	1230 SF	\$ 150.00	\$184,500.00
		Bike Rack	2 Each	\$ 1,200.00	\$ 2,400.00
		Site Work	Lump Sum	\$ 30,000.00	\$ 30,000.00
		Mobi-Mat	780 SF	\$ 18.00	\$ 14,040.00
3	Newburyport	Fencing	330 LF	\$ 20.00	\$ 6,600.00
		Ticket Booth	Lump Sum	\$ 12,000.00	\$ 12,000.00
		Site Work	Lump Sum	\$ 40,000.00	\$ 40,000.00
		Rehabilitation Restroom ¹	Lump Sum	\$ 60,000.00	\$ 60,000.00
Subtotal:					\$449,302.90
Engineering/Permitting (10%):					\$ 44,930.29
Admin/Construction Services (8%):					\$ 35,944.23
Construction Contingency (15%):					\$ 67,395.44
TOTAL:					\$597,572.86

Note 1: The project cost would increase by \$206,500 (including engineering/permitting; admin/construction services and construction contingency) if a replacement restroom facility is constructed versus rehabilitation of existing facility.

8.0 FUNDING SOURCES

In addition to private funding sources such as foundation grants and private fundraising, there are a few state grant programs that could be used to fund portions of the proposed improvements outlined in this report. Many of the grant programs require local matches and or formally adopted local open space and recreation plans as described below.

MA Seaport Bond Bill

The Seaport Bond Bill was adopted by the state legislature under Chapter 28 of the Acts of 1996. The bill specified a \$450,000 expenditure for public access improvements at Plum Island. The public access improvements outlined in this proposed observation deck at the Newbury Center Parking lot and other suggested public access related improvements may be eligible for funding under this program.

MA Executive Office of Environmental Affairs, Division of Conservation and Recreation

The State Division of Conservation and Recreation has several grant programs related to public access and/or open space as described below.

The Greenways and Trails Demonstration Grants Program (Not funded in 2006)

Provides \$5,000 grants to municipalities and non profits for greenway and trail planning, mapping and resource assessment, greenway related public education and outreach, and greenway and trail management, maintenance, and expansion.

Recreational Trails Grant (currently accepting grants for 2007 through October 2, 2006)

The Recreational Trails Program provides funding for a variety of trail protection, construction, and stewardship projects throughout Massachusetts. This national program makes funds available to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The Program is funded through the Federal Highway Administration (FHWA) and administered in Massachusetts on a reimbursement basis by the Department of Conservation and Recreation (DCR), in partnership with the Massachusetts Recreational Trails Advisory Board, and the Executive Office of Transportation (EOT).

Rivers and Harbors Grant Program

A matching grant program under the Division of Conservation and Recreation Office of Waterways for local government for design and construction projects that address problems on coastal and inland waterways, lakes and great ponds. The purpose of this program is to enable municipalities to address various types of waterways-related problems and provide for financial and technical assistance during engineering, design, permit acquisition, construction management, construction and related efforts. Typical types of projects qualifying for the program are: dredging of channels, harbors and inland waterways for navigation, tidal flushing, flood storage and river, lake or pond restoration; provision of public access, including rehabilitation of publicly owned piers, seawalls, wharves, jetties, bulkheads and revetments; rehabilitation or construction of flood control measures,

including dikes, weirs, check dams, tide or floodgates and flood control internal drainage systems; lake and pond restoration or management activities for public access, water-dependent recreation or habitat enhancement purposes; beach nourishment for barrier beach maintenance, habitat enhancement or recreational purposes; coastal or inland wetlands restoration; and streambank and shoreline erosion control protection.

Federal Land and Water Conservation Fund

The Federal Land & Water Conservation Fund (P.L.88-578) provides up to 50% of the total project cost for the acquisition, development and renovation of park, recreation or conservation areas. Nearly 4000 acres have been acquired and hundreds of parks renovated using the \$94.2 million that Massachusetts has received from the state side portion of the federal program since 1965. Municipal Conservation commissions and park departments are eligible to apply for grant funds. Access by the general public is required.

Urban Self Help Grants

Provides grant assistance to cities and towns to acquire parkland, and also to develop or renovate existing outdoor public recreation facilities. Any town with a population of 35,000 or more year-round residents, or any city regardless of size, that has an authorized park /recreation commission and conservation commission, is eligible to participate in the program. Communities that do not meet the population criteria listed above may still qualify under the "small town," "regional," or "statewide" project provisions of the program. Municipalities must have a current open space and recreation plan to apply, and the land must be open to the general public. Municipalities must have a current open space and recreation plan to apply, and the land must be open to the general public.

Private Fundraising

Private Fundraising is another source of financial aid that has successfully been used for Plum Island improvements in the past.

STANDARDS FOR BOARDWALK AND WALKOVER CONSTRUCTION NEWBURYPORT, MASSACHUSETTS

1. Wherever possible, existing public access maintained the City of Newburyport shall be preferred over private access. Therefore, the preferred access to the beach will be via the public access for properties that directly abut or are adjacent to these access ways.
2. Wherever possible, common or shared access servicing multiple properties will be encouraged.
3. Site conditions will help identify if an elevated boardwalk is preferred over an on-grade access. This will be determined upon the size of the dune and the slope of the seaward dune face. Dunes that are relatively small in height and that have a gradual seaward dune face may be suitable for an on-grade access. If the site is suitable for an on-grade access it shall be no wider than 36 inches and the alignment shall be well marked. The direction or approach of the on-grade access will be determined based upon site conditions. Generally the approach should be to the southeast at a 45-degree angle to the shore.
4. Where site conditions require an elevated boardwalk the following standards shall be employed:
 - a) The height from the dune surface (sand) to the lowest horizontal part of the boardwalk (excluding piles or other vertical supports) shall be a minimum of 18 inches for retrofitted boardwalks and a minimum of 24 inches for new boardwalks or as high as it is wide, whichever is appropriate. No skirts, lattice or similar trim components will be allowed. The design height above the dune shall also consider the height of the surrounding dune.
 - b) The maximum width of the boardwalk shall be 36 inches.
 - c) All boardwalk decking shall have a minimum of one inch spacing.
 - d) The boardwalk shall be designed to allow modifications as the dune grows in height and width.
 - e) The boardwalk shall be designed with removable or breakaway sections, especially for those areas where the boardwalk or stairs from the boardwalk are located on the most seaward face of the dune or on the beach.
 - f) The approach or direction of the boardwalk from the private property to the beach will be determined based upon site conditions.
 - g) No risers will be allowed on stairs.
 - h) Vertical supports shall be pilings or posts that are driven and are not to be encased in concrete or other footings. No heavy equipment or machinery shall be used to install the vertical supports.
 - i) Vertical supports are not to be installed in dune slopes that are steeper than 30 degrees.
 - j) Any portion of the boardwalk or stairs that are removed on a seasonal basis shall not be stored on any portion of a vegetated dune.



A GUIDE TO DUNE STABILIZATION

P.O. Box 5303
Salisbury, MA 01952
(508) 462-4481

MIKE MAGNIFIC
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SALISBURY BEACH STATE RESERVATION



A) IMPORTANCE OF DUNES

- The primary dune is the first line of defense against storms; it absorbs and mitigates the force of onshore storm wave action, protecting your house and the mainland behind the dunes. Because dunes are at a higher elevation than the beach, they protect inland areas from storm damage and flooding by storm waves. Vegetation cover, such as dune grass, contributes to the growth and stability of coastal dunes, minimizing wind erosion and trapping wind blown sand. We must maintain this dune system in order to retain its protective qualities.

B) DUNE GRASS PROTECTION PROGRAM

- Dune vegetation is very intolerant of both pedestrian and vehicular traffic. Even the pressure of foot traffic will cause severe root dieback, resulting in substantial reduction of vegetative cover, which in turn can lead to rapid deterioration of the entire dune system. That is why it is so important to keep people off the dunes, especially in the summer when most vegetative destruction occurs due to increased foot traffic.

C) SNOW FENCING

- Snow fence shall be installed around the perimeter or in front of the dune to direct pedestrian movement away from the fragile dune area. The best current available barrier material is wood picket snow fencing with a 50% porosity and posts placed no more than 12 feet apart. You will be supplied with one roll of snow fence, one bundle of 5 posts and 15 aluminum fence fasteners. Additional snow fence and stakes can be purchased at your local hardware store. If you do not have an existing dune in front of your house, install the fence approximately 50-100 feet from your house, parallel to the ocean or perpendicular to the prevailing winds. (NE).

SNOW FENCE INSTALLATION

- 1) Space the stakes approx 12 feet apart and drive them at least two feet into the ground.
- 2) Attach fencing to stakes at the top, middle and bottom with aluminum fence fasteners.
- 3) Bottom of wooden fence shall contact the ground surface along its entire length, tapping the top of the wooden slats may be necessary to ensure that the fence touches the ground.
- 4) At the ends of each fence, wrap post with at least one or two wooden slats and twist wires around post to attach the wire ends to the fence. Make sure that no wire ends are exposed to the public.

DUNE GRASS PLANTING

American Beach Grass will be available for planting this spring. It can also be purchased from commercial growers or collected by thinning native strands. Thinning native strands must be done with extreme care in order to avoid creation of new areas of erosion. Plants should be taken only from back dune areas or protected areas that have dense stands of beach grass. When in doubt, call us and we will analyze the area and give you our recommendation.

A) THINNING NATIVE AMERICAN STRANDS OF BEACH GRASS

- dig clumps of beach grass with a shovel.
- shake to release the sand, separate into groups of three live culms (stems) each, and remove dead culms, blades and any underground stems. Culms should be planted as soon as possible and watered.

B) PLANTING PROCEDURE

Beach grass can be planted successfully from mid October to mid April (the best time to plant is between March and April when the ground is not frozen). Survival rates are much lower in the summer months and not recommended. Open a hole 12-14 inches deep with a narrow bladed spade. Space holes 18-20 inches apart, and stagger rows for maximum sand entrapment. Place three culms in hole with main root seven to nine inches below surface of the sand. Pack the sand around the plants by stomping on the ground next to the plants with your feet to eliminate air from the root zone. Fertilize in spring only. Use inorganic, time released granular fertilizer such as 10-10-10 or 15-10-10 at a rate of 2 pounds per 1,000 square feet.

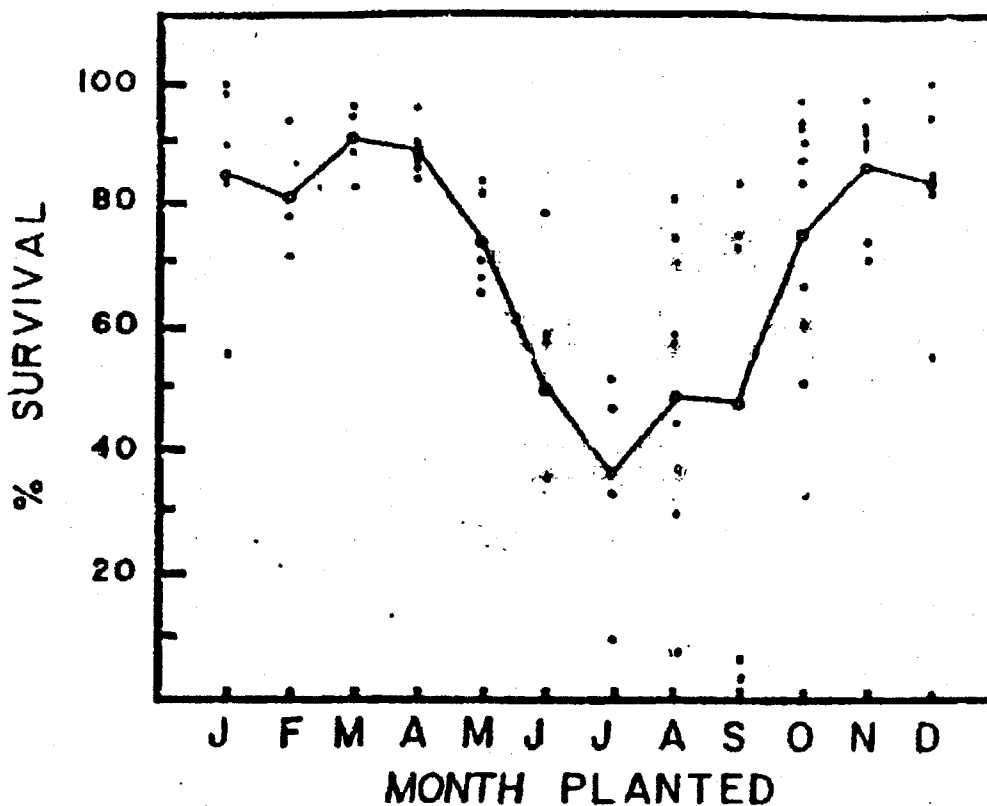
C) COVERAGE

Roughly 3,000 culms, at three culms per hole, and enough to cover area about 2,00 square feet (40 feet by 50 feet). Studies have shown that a 90 foot wide strip of vigorously growing beach grass, planted perpendicular to the prevailing wind direction, will trap and retain all of the sand being blown by the wind. Therefore, of possible, in order to get the maximum dune stabilization, the planted areas should be at least 90 feet wide.

D) OTHER DUNE PLANTS

Other native plants that will grow on dunes include seaside goldenrod, beach pea, bayberry, dusty miller, weeping lowe grass and beach plum. Non-native plants that do well at coastal locations include Japanese black pine, rugosa rose, bristly locust, and autumn olive.

In conclusion, we must take protective measures to ensure that our dunes will last and protect the land and property behind them. We have experienced several damaging storms in recent years and realize how important it is to have a well established dune system. One of the most important mechanisms in protecting the dunes is through public education and individual conservation. Sand, vegetation and fencing are three major components required to maintain a healthy dune system, especially where recreational use is extremely high. So, planting, protecting and preserving the dune system is critical in order to maintain Salisbury Beach, the environment, your property and our way of life. If you have any questions or would like more information, please, call our office at 462-4481.



The best time to plant beachgrass is from October through April. Note the poor survival when planted from June through September.

Commercial Sources of Beach Grass

Beachgrass is usually sold in bundles of 300 culms per bundle. The price in this area ranges from \$20.00 per bundle for 1-5 bundles to \$15.00 per bundle for 500 or more bundles.

Soil Conservation Service
Bristol County Conservation District
21 Spring Street
Taunton, MA 02780
508-824-6668

Harold Fine
24 Smith Street
Rehoboth, MA 02769
508-222-3477

Springer Environmental Services
245 Keene Road
Acushnet, MA 02743

Agricultural Stabilization Nursery
P.O. Drawer 987
New Bern, NC 28560
919-637-3567

Church's Nursery
Old Shore Road (Erma Road) *SEASHORE*
RFD #1 *609 884 3927*
Cape May, NJ 08204

Moore's Sod Farm
P.O. Box 281
Berlin, MD 21811

Feat and Son
Kilby Ln.
Jericho, NY
(516) 288-3458

MEMORANDUM OF UNDERSTANDING

BETWEEN

U.S. FISH AND WILDLIFE SERVICE
PARKER RIVER NATIONAL WILDLIFE REFUGE
6 PLUM ISLAND TURNPIKE
NEWBURYPORT, MA 01950

AND

CITY OF NEWBURYPORT, MASSACHUSETTS
60 PLEASANT STREET
NEWBURYPORT, MASSACHUSETTS 01950

I. INTRODUCTION:

This understanding is between the Parker River National Wildlife Refuge “Refuge” and the City of Newburyport, Massachusetts “City” for the cooperative management and monitoring of the Federally threatened and State endangered piping plover and state endangered least tern on that portion of Plum Island owned/managed by the City.

II. PURPOSE:

The objectives of this cooperative effort are to:

1. Monitor beach property within the City of Newburyport for the presence of nesting piping plover and/or least terns.
2. Protect any piping plover or least tern nests, located on Plum Island beaches within the City, from human and animal disturbance during the nesting period.
3. Assist the Refuge with the management and monitoring of nesting sites each year.

This effort will formalize an on-going informal effort between the Refuge and the City in managing and monitoring nesting sites for piping plover along the Plum Island beach within the City, excluding the Parker River NWR.

This formalized partnership will facilitate and enhance efforts to protect, manage, and monitor nesting piping plovers and least terns, should they nest on the City beach, and contribute to the survival of these two species.

This agreement provides for the sharing of services, personnel, equipment, facilities, and funds.

III. AUTHORITY:

This MOU between the Parties is hereby entered into by the FWS under authority of the Fish and Wildlife Coordination Act, as amended, (16 U.S.C. Section 661), the Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)], the North American Conservation Act (16 U.S.C. 4401-4412; 103 Stat 1968) P.L.101-233; National Wildlife Refuge System

Administration Act of 1966 (16 U.S.C. 668dd-668ee) -- This Act, derived from sections 4 and 5 of Public Law 89-669 (October 15, 1966; 80 Stat. 927), constitutes an "organic act" for the National Wildlife Refuge System. It was recently amended by P.L. 105-57, "The National Wildlife Refuge System Improvement Act of 1997."

Note: The obligations of both Parties herein are subject to the availability of funding, and nothing contained herein shall be construed as binding either Party to expend in any one fiscal year any sum in excess of available private dollars, State or congressional appropriations, or to involve either Party in any contract or other obligation for further expenditure of money in excess of such appropriations or private allocations.

IV. STATEMENT OF MUTUAL BENEFIT:

This program will promote the Service's mission of working with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people. It will also promote the Cities efforts to support the protection and management of barrier beach property by providing habitat for the piping plover and least tern.

V. RESPONSIBILITIES:

A. The Refuge will:

- 1) Provide staff and/or volunteers to monitor the beach for piping plover and least tern nesting activity, fence and sign nesting sites, set up predator exclosures around nests.
- 2) Train any City staff working on the beach during the nesting season with regard to nesting piping plover or least tern activity.
- 3) Provide a report reviewing the season's piping plover nesting activity and issues, and provide recommendations for the next season.

B. The City shall:

- 1) Provide the necessary materials for protecting nesting piping plover and least terns including, but not limited to, fencing materials, nest exclosures, and nesting area signs.
- 2) Assist with funding temporary staff engaged in monitoring nesting activities on the Cities portion of Plum Island.
- 3) Coordinate any beach management activity with refuge staff during the nesting season to prevent any adverse impacts to piping plovers or least terns.
- 4) Provide signs and enforce all local ordinances regarding dogs within 100 yards of nesting piping plovers or least terns.
- 5) Work with Refuge staff to provide information to Plum Island residents and visitors regarding this piping plover and least tern cooperative effort.

- C. Refuge staff will meet with the City at least semi-annually to review the purposes of this agreement, accomplishments of the previous years work, and the next nesting season.

VI. AGREEMENT TERM:

This Agreement shall be for a term of 5 years, commencing on the date of its execution, after which it shall be reviewed for possible renewal. This Agreement may be terminated, without cause, by either party, by giving a 30-day written notice to the other party.

VII. SPECIAL PROVISIONS:

- A. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties of this MOU will be handled in accordance with applicable laws, regulations, and procedures.
- B. This agreement is made upon the express condition that the United States, its agents, and employees shall be free from all liabilities and claims for damages and/or suits for or by reason of injury to any person or property of any kind whatsoever, whether to the person or property of the City or third parties, from any cause whatsoever arising from any activities conducted pursuant to the terms of this Agreement, and the City hereby covenants and agrees to indemnify, defend, save, and hold harmless the United States, its agents and employees from all such liabilities, expenses and costs on account of or by reason of any injuries, deaths, liabilities, claims, suits or losses however occurring or damages arising out of the same. This indemnification shall survive the termination of this Agreement
- C. This Agreement shall constitute the entire Agreement between the parties and may not be modified or amended except by a written instrument executed by each of the parties, expressing such amendment. No failure by either party to exercise, and no delay in exercising any right, power or remedy hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or remedy hereunder preclude any other or further exercise thereof, or the exercise of any other right, power or remedy.
- D. No member of or delegate of Congress or a resident commissioner after their election or appointment, either before or after they have qualified and during continuance in office; and no officer, agent, or employee of the Federal Government shall be admitted to any share or part of this contract or agreement or any benefit arising therefrom. The provision herein, with respect to the interest of members of Congress and resident commissioners in this agreement shall not be constructed to extend to an incorporated company where such contract or agreement is for the general benefit of such corporation.
- E. During the term of this Agreement, the City will not discriminate against any person because of race, color, religion, sex, or national origin and will take affirmative action to ensure that applicants are employed without regard to their race, color, sexual orientation, national origin, disabilities, religion, age, or sex.
- F. The City will pay to the United States the full value for all damages to the lands or

other properties or employees of the FWS arising out of acts or omissions of the City, its representatives, employees or contractors during the term of this Agreement.

- G. This Agreement does not grant rights or benefits of any nature to any third party.
- H The City shall not assign to any other person or entity any part of this Agreement, unless the prior written approval of the Refuge.
- I. The principle contacts for this MOU are:
 - 1. U.S. Fish and Wildlife Service
Parker River NWR
Graham W. Taylor, Refuge Manager
6 Plum Island Turnpike
Newburyport, MA 01950
(978) 465-5753
 - 2. Newburyport Conservation Commission?
?????, Chair
60 Pleasant Street
Newburyport, MA 01950
(978) 465-4413

In Witness Whereof, the parties have caused this Memorandum of Understanding to be executed as of the date of last signature below:

APPROVED:

U.S. Fish and Wildlife Service
Parker River NWR

City of Newburyport,
Massachusetts

BY: _____
Title:

BY: _____
Title: Mayor

DATE: _____

DATE: _____

GUIDELINES FOR MANAGING RECREATIONAL USE OF BEACHES TO PROTECT PIPING PLOVERS, TERNS, AND THEIR HABITATS IN MASSACHUSETTS

Massachusetts Division of Fisheries and Wildlife
Natural Heritage and Endangered Species Program
Field Headquarters, Rt. 135
Westborough, MA 01581

21 April 1993

I. INTRODUCTION

The Massachusetts Division of Fisheries and Wildlife (the Division) has developed the following guidelines to assist beach managers and property owners with protecting piping plovers, least terns, common terns, roseate terns, arctic terns, and their habitats. Implementing these guidelines will help beach managers and property owners avoid potential violations of the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00) involving recreational use of beaches used by piping plovers and terns for breeding and nesting habitat.

The Division intends to apply these guidelines in its review of Notices of Intent, pursuant to the Massachusetts Wetlands Protection Act regulations (310 CMR 10.37), for vehicular use of beaches where piping plovers and terns occur.

The Department of Environmental Protection has developed a set of recommended conditions for barrier beach management to be used by municipal conservation commissions in drafting Orders of Conditions. In addition, the Massachusetts Barrier Beach Task Force, coordinated by the Office of Coastal Zone Management, has developed a comprehensive set of guidelines covering the full range of barrier beach management issues. The following guidelines should be read and applied in conjunction with these other documents.

Users of these piping plover and tern guidelines are advised that they do not supersede any law, regulation, or official policy of this or any other agency. Rather, these guidelines are intended to complement other regulatory review processes regarding recreational activities on beaches by providing a standard set of scientifically based management recommendations.

This document contains five sections: 1) an introduction, 2) summaries of life histories of these species and threats to their continued existence in the state, 3) a summary of pertinent laws and regulations, 4) guidelines for managing and protecting plovers, terns, and their habitats, and 5) literature cited.

In these guidelines, the Division has sought to provide the necessary protection to piping plovers and terns without

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unnecessarily restricting appropriate access along all of the state's beaches. The Division has a long history of promoting the rights of citizens to enjoy a variety of outdoor pursuits, provided that they do not jeopardize the state's wildlife resources. The Division has worked to facilitate fishing and hunting access statewide and has supported the common law right of access to the shorelines of the coast and "Great Ponds" for the purposes of fishing and fowling. Although these guidelines make it clear that it will be necessary at times to restrict vehicular access temporarily on beaches where and when piping plovers and terns are present, the Division will only support such restrictions when it is necessary to protect the habitat, nests, and unfledged chicks of plovers and terns. The Division will continue to seek and consider management measures that offer maximum flexibility in balancing recreational use with protection of rare species and their habitats. Even when vehicular access is restricted, the Division will normally support continued access to beaches for fishermen and other recreational users by foot and by boat.

II. SPECIES STATUS, LIFE HISTORY, AND THREATS

Piping Plover

Piping plovers are small, sand-colored shorebirds that nest on sandy, coastal beaches from South Carolina to Newfoundland. The U.S. Atlantic coast population is listed as "Threatened" by the U.S. Fish and Wildlife Service under provisions of the U.S. Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 1988), and was estimated at 790 pairs in 1992 (U.S. Fish and Wildlife Service 1992). In Massachusetts, the piping plover is also listed as "Threatened" by the Massachusetts Division of Fisheries and Wildlife under provisions of the Massachusetts Endangered Species Act. In 1992, 213 pairs of piping plovers nested on Massachusetts beaches (Melvin 1992).

Piping plovers nest on coastal beaches above the high-tide line, sand flats at the end of sand spits, gently sloping foredunes, and in blow-outs or washover areas between or behind coastal dunes. They may also nest where sandy dredged material has been deposited. Nests are simple scrapes in the sand or mixtures of sand, gravel, and shells. Nests are placed on open sand or in patches of sparse to moderately dense beach grass and other dune vegetation. Piping plovers depend on natural processes of beach erosion and accretion through wind and wave action to maintain suitable nesting habitat.

Piping plovers return to nesting beaches in Massachusetts

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from mid-March to early May. Males establish and defend territories and court females. Nesting may occur from mid-April through late July. Clutch size is usually four eggs, and eggs are usually incubated for 27-28 days before hatching. Piping plovers fledge only a single brood per season, but may renest several times if previous nests are lost. Chicks are precocial and able to move about within hours after hatching. They may move hundreds of yards from the nest site during their first week of life. Chicks remain together with one or both parents until they fledge (are able to fly) at 25 to 35 days of age. Depending on date of hatching, unfledged chicks may be present from late May until mid-August, although most fledge by the end of July. Adults and chicks feed on amphipods, marine worms, flies, and other invertebrates. The most important feeding habitats for both adults and chicks are intertidal areas and wrack (seaweed, vegetation, shells, and other organic debris deposited on the beach by tides and storms) (Gibbs 1986, Goldin et al. 1990, Hoopes et al. 1992).

Sandy beaches that provide nesting habitat for piping plovers are also attractive recreational habitats for people and their pets. Human recreational activities can be a source of both disturbance and direct mortality to piping plovers (Blodgett 1990, Melvin et al. 1991). People on beaches may inadvertently crush eggs, cause nests to be abandoned, and disturb or displace unfledged chicks. Unleashed dogs may chase adults, kill chicks, and eat eggs. Kites and fireworks are highly disturbing to piping plovers (Hoopes et al. 1992; Howard et al. 1993).

Unrestricted use of motorized vehicles on beaches is a serious threat to piping plovers and their habitats. Vehicles can crush both eggs and chicks (Burger 1986, Patterson 1988, Strauss 1990, Melvin et al. 1991). In Massachusetts, biologists documented 7 incidents in which 9 chicks were killed by vehicles between 1989 and 1992 (Melvin et al. 1993). Many biologists that monitor and manage piping plovers believe that many more chicks are killed by vehicles than are found and reported. On sections of Massachusetts beaches used by vehicles during nesting and brood-rearing periods, breeding plovers are generally either absent or less abundant than expected given available nesting and feeding habitat. In contrast, plover abundance and productivity has increased on beaches where vehicle restrictions during chick-rearing periods have been combined with protection of nests from predators.

Typical behaviors of piping plover chicks increase their vulnerability to vehicles (Melvin et al. 1993). Chicks frequently move between the upper berm or foredune and feeding habitats in the wrack line and intertidal zone. These movements place chicks in the paths of vehicles driving along the berm or

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through the intertidal zone. Chicks stand in, walk, and run along tire ruts, and sometimes have difficulty crossing deep ruts or climbing out of them. Chicks sometimes stand motionless or crouch as vehicles pass by, or do not move quickly enough to get out of the way. Wire fencing placed around nests to deter predators is ineffective in protecting chicks from vehicles because chicks typically leave the nest within a day after hatching and move extensively along the beach to feed.

Vehicles also degrade piping plover habitat by crushing wrack into the sand and making it unavailable as cover or a foraging substrate, by creating ruts that may trap or impede movements of chicks, and by causing disturbance that may prevent plovers from using habitat that is otherwise suitable (Goldin et al. 1990, Strauss 1990, Melvin et al. 1993).

Least Tern

Least terns are small, white and black seabirds that nest along Atlantic coast beaches from southern Maine to Florida. The least tern is listed as a "Species of Special Concern" by the Division of Fisheries and Wildlife under provisions of the Massachusetts Endangered Species Act. An estimated 2,642 pairs nested at 51 sites in Massachusetts in 1992 (Blodget 1992).

Least terns nest in habitats that are similar to those of the piping plover, and the two species often nest near each other. Least terns arrive in Massachusetts in early May, engage in elaborate courtship rituals, mate, and quickly establish nesting colonies. Actual nesting occurs from about the third week of May to mid-July. Nesting colonies range in size from several pairs to over 500 pairs. Nests are shallow "scrapes" in the sand, usually in sandy areas devoid of vegetation, but sometimes in areas of sparse beach grass, beach pea, and other dune vegetation. Least terns, like piping plovers, have nested along the Atlantic coast for thousands of years and depend on natural processes of beach and dune erosion and accretion to maintain their habitats.

Clutches consist of 1-3 eggs and incubation averages 21 to 23 days. Least terns are single-brooded, but will renest multiple times if previous nests are lost. Chicks are precocial and may move considerable distances along the beach before fledging, which occurs after 20-22 days. Adults deliver fish caught in the surrounding waters to chicks. Soon after chicks are able to fly, least terns gather in pre-migratory flocks and depart southward; most are gone before the end of August.

Least terns are vulnerable to disturbance from humans, pets,

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and vehicles during periods of courtship and egg-laying in May and June. Similar to piping plovers, incubating least tern adults, eggs, and chicks are extremely cryptic. Prolonged or repeated disturbance at colonies can lead to egg and chick loss from exposure, predation, or abandonment. Least tern chicks are also vulnerable to mortality caused by off-road vehicles, and may stand or crouch in or walk and run along vehicle ruts.

Common, Roseate, and Arctic Terns

These three similar species of white and black seabirds nest together in mixed-species colonies. All are slightly larger than the least tern. The common tern is indeed the most "common" of the group. In 1992, 8,600 pairs were estimated at 35 sites in Massachusetts, although only 9 of those colonies exceeded 100 pairs (Blodget 1992). The arctic tern, at the southern edge of its natural range in Massachusetts, has been declining since the 1950's and reached an all-time low of only 8 pairs in 1992. Both of these species are listed by the Massachusetts Division of Fisheries and Wildlife as "Species of Special Concern" under provisions of the Massachusetts Endangered Species Act.

The Northeastern population of the roseate tern is listed as "Endangered" by both the U.S. Fish and Wildlife Service under the U.S. Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 1989), and the Massachusetts Division of Fisheries and Wildlife under provisions of the Massachusetts Endangered Species Act. Of an estimated 1,412 pairs in Massachusetts in 1992, 1,375 pairs (97%) nested on Bird Island in Buzzards Bay (Blodget 1992). The rest were scattered among large colonies of common terns.

These three species of larger terns prefer to nest on offshore islands and remote tips of barrier beaches. Unfortunately, gulls have usurped most optimal nesting sites since the 1950's, forcing terns to nest at a limited number of secondary inshore sites where they are more exposed to human disturbance and a host of land-based predators.

The life histories of these three species of terns are generally similar. Exemplifying the three, common terns select dune areas with moderate to dense stands of beach grass and other dune vegetation. Birds arrive from the south in early May and select colony sites before the end of May. Ritualized courtship and pair formation occur on the beach and sandflats adjacent to the colony site. Nesting colonies range from a few to over 4,000 pairs. Nests are usually scrapes in the sand lined with beach grass and seaweed. Clutches of 2-3 eggs are laid and both parents share incubation duties for about 23 days. Young are precocial but are fed and brooded by adults. Diets of these

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terns are almost exclusively fish. As the young approach fledging at about 28 days, they congregate in rearing or "nursery" areas on broad expanses of beach and sand flats, where they loaf and are fed by adults. At some sites, thousands of young terns may be present in these nursery areas from late July through mid-August. After mid-August, most terns have fledged and all three species gather at staging areas prior to departing for winter quarters by the end of August.

Prolonged or repeated disturbance at nesting colonies or nursery areas of common, arctic, or roseate terns can lead to egg and chick loss from exposure, predation, or abandonment. Eggs and young chicks tend to be less subject to mortality from vehicles because they occur more often in dune areas, but older chicks are sometimes run over when they move onto the outer beach prior to fledging. Older chicks have also been found dead, tangled in kite string.

III. MASSACHUSETTS LAW

This section is provided to give a brief overview of provisions of the Massachusetts Wetlands Protection Act and Endangered Species Act that are pertinent to the management of piping plovers, terns, and their habitats. The reader is strongly advised to read the official texts of the current laws and regulations cited below.

Massachusetts Wetlands Protection Act (MGL c. 131 s. 40)

The Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife (the Program) acts as the scientific authority to determine what is actual habitat and to provide an opinion about whether proposed activities subject to the Wetlands Protection Act will have adverse effects on rare wetlands wildlife habitat. Opinions issued by the Program are presumed to be correct, although this presumption is rebuttable and may be overcome upon a clear showing to the contrary.

Massachusetts Endangered Species Act (MGL c. 131A)

The Massachusetts Endangered Species Act (MESA) and regulations (321 CMR 10.00) are administered by the Massachusetts Division of Fisheries and Wildlife. The Act prohibits the "taking" of any species of animal or plant listed as

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"Endangered", "Threatened", or "Species of Special Concern" in Massachusetts. For animals, "taking" is defined as: "to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding, or migratory activity or attempt to engage in any such conduct, or to assist such conduct". Regulations implementing the Act state further that: "All state agencies shall utilize their authorities in furtherance of the purposes of MESA and these regulations; review, evaluate and determine the impact on Endangered, Threatened and Special Concern species or their habitats of all works, projects, or activities conducted by them; and use all practicable means and measures to avoid or minimize damage to such species or their habitats." This includes "any work, project, or activity either directly undertaken by a state agency, or if undertaken by a person, which seeks the provision of financial assistance by an agency or requires the issuance of permits by an agency".

IV. MANAGEMENT GUIDELINES

VEHICLE MANAGEMENT

Protection of Nests and Nesting Habitat

On beaches where vehicles will be driven, all areas of suitable piping plover nesting habitat, as determined by the Division, should be identified and delineated with posts and warning signs or symbolic fencing on or before April 1 each year. Suitable nesting habitat for all species of terns should be identified and so delineated on or before May 15 each year.

All vehicular access into or through delineated nesting habitat should be prohibited. However, prior to hatching, vehicles may pass by such areas along designated vehicle corridors established along the outside edge of plover and tern nesting habitat. Vehicles may also park outside delineated nesting habitat, if beach width and configuration and tidal conditions allow. Vehicle corridors or parking areas should be moved, constricted, or temporarily closed if territorial, courting, or nesting plovers or terns are disturbed by passing or parked vehicles, or if disturbance is anticipated because of unusual tides or expected increases in vehicle use during weekends, holidays, or special events.

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Protection of Chicks and Chick Habitat

Sections of beaches where unfledged piping plover or tern chicks are present should be temporarily closed to all vehicles not deemed essential. (See the provisions for essential vehicles below.)

When unfledged plover chicks are present, vehicles should be prohibited from all dune, beach, and intertidal habitat within 100 yards of either side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting 200 yard-wide area of protected habitat for plover chicks should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles. If unfledged plover chicks move outside the original 200 yard-wide area of protected habitat, then the boundaries of the protected area should be adjusted to provide at least a 100 yard buffer between chicks and vehicles.

When unfledged least tern chicks are present, vehicles should be prohibited from all dune, beach, and intertidal habitat within 100 yards of either side of lines drawn through the outermost nests in the colony and perpendicular to the long axis of the beach. The resulting area of protected habitat for least tern chicks should extend from the ocean-side low water line to the bay-side low water line, or to the farthest extent of dune habitat if no bay-side intertidal zone exists. If unfledged chicks move outside the original protected area, then the boundaries of the protected area should be adjusted to provide at least a 100 yard-wide buffer between unfledged chicks and vehicles. However, vehicles may pass through any portions of the protected area considered inaccessible to least tern chicks because of distance, steep topography, dense vegetation, or other naturally-occurring obstacles. Because least tern chicks disperse from nests shorter distances and at older ages than piping plover chicks, under some circumstances it may be possible to allow passage of vehicles through portions of protected least tern chick habitat if, in the opinion of the Division, this can occur without substantially increasing threats to least tern chicks or their habitats.

Timing of Vehicle Restrictions in Chick Habitat

Restrictions on use of vehicles in areas where unfledged plover or tern chicks are present should begin on or before the

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date that hatching begins and continue until chicks have fledged. For purposes of vehicle management, plover chicks are considered fledged at 35 days of age or when observed in flight, whichever occurs first. Tern chicks are considered fledged when they are capable of flight.

When piping plover nests are found before the last egg is laid, restrictions on vehicles should begin on the 26th day after the last egg is laid. This assumes an average incubation period of 27 days, and provides a 1 day margin of error.

When plover nests are found after the last egg has been laid, making it impossible to predict hatch date, restrictions on vehicles should begin on a date determined by 1 of 3 scenarios:

- 1) If a plover nest found with a complete clutch is monitored twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs), vehicle use may continue until hatching begins. Nests should be monitored at dawn and dusk to minimize the time that hatching may go undetected if it occurs after dark. Whenever possible, nests should be monitored from a distance with spotting scope or binoculars to minimize disturbance to incubating plovers.

- 2) If a plover nest is found with a complete clutch before May 22 (the earliest recorded hatch date for piping plovers in Massachusetts), and is not monitored twice per day, at dawn and dusk, then restrictions on vehicles should begin May 22.

- 3) If a plover nest is found with a complete clutch on or after May 22, and is not monitored twice per day, at dawn and dusk, then restrictions on vehicles should begin immediately.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, restrictions on vehicles should begin immediately.

If, in the opinion of the Division, ruts are present that are deep enough to restrict movements of plover chicks, or vehicle impacts on wrack are so severe that wrack must be allowed to accumulate naturally prior to hatching, then restrictions on vehicles should begin at least 5 days prior to the anticipated hatching date of plover nests. If a plover nest is found with a complete clutch, precluding estimation of hatching date, and availability of wrack has been substantially reduced by vehicle passage, or deep ruts have been created that could reasonably be expected to impede chick movements, then restrictions on vehicles should begin immediately.

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Restrictions on use of vehicles in least tern chick habitat should begin as soon as hatching begins (as early as June 12). Restrictions may begin later if, in the opinion of the Division, tern chicks are not endangered by vehicles because of distance or intervening steep terrain, dense vegetation, or other naturally-occurring barriers.

Areas of dune, beach, or intertidal habitat used as nursery areas by unfledged or recently fledged tern chicks, as identified by the Division, should be delineated with posts, warning signs or symbolic fencing not later than June 21. All access by vehicles into posted tern nursery areas should be prohibited while unfledged or recently-fledged tern chicks are present in these areas, until it is determined that use of nursery areas by young terns has ended (i.e. young terns are no longer being fed by adult terns).

Essential Vehicles

Essential vehicles, as defined by municipal conservation commissions pursuant to the Guidelines for Barrier Beach Management in Massachusetts developed by the Massachusetts Barrier Beach Task Force, should only travel on sections of beaches where unfledged plover or tern chicks are present if such travel is absolutely necessary and no other reasonable travel routes are available. Essential vehicles should travel through chick habitat areas only during daylight hours, except in emergencies, and should be guided by a qualified monitor who has first determined the location of all unfledged plover and tern chicks. All steps should be taken to minimize number of trips by essential vehicles through chick habitat areas. Use of open, 3 or 4-wheel motorized all-terrain vehicles (ATVs) or non-motorized all-terrain bicycles is recommended whenever possible for monitoring and law enforcement because of the improved visibility afforded operators. Homeowners should consider other means of access, eg. by foot, water, or shuttle services, during periods when chicks are present. A log should be maintained by the beach manager of the date, time, vehicle number and operator, and purpose of each trip through areas where unfledged chicks are present. Personnel monitoring plovers and terns should maintain and regularly update a log of the numbers and locations of unfledged plover and tern chicks on each beach. Drivers of essential vehicles should review the log each day to determine the most recent number and location of unfledged chicks.

Travel by essential vehicles should avoid the wrack line and should be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are substantially reducing availability of wrack or are creating ruts

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that could impede chick movements, use of essential vehicles should be further reduced and, if necessary, restricted to only emergency vehicles.

MANAGEMENT OF OTHER RECREATIONAL USES

The activities discussed in this section are not subject to the jurisdiction of the Wetlands Protection Act because they are not considered to be alterations of wetland resource areas. The following guidelines should only be applied in reference to the Massachusetts Endangered Species Act.

On beaches where pedestrians, joggers, sun-bathers, picnickers, fishermen, boaters, horseback riders, or other recreational users will be present in numbers that could harm or disturb incubating plovers or terns, their eggs, or chicks, refuge areas of at least 50 yard-radius around nests and above the high tide line should be delineated with warning signs and symbolic fencing. Only persons engaged in rare species monitoring, management, or research activities should enter refuge areas. Refuge areas should remain fenced as long as viable eggs or unfledged chicks are present.

Refuge areas around nests should be expanded if a 50 yard-radius is deemed inadequate to protect incubating adults or unfledged chicks from harm or disturbance. This may include situations where plovers or terns are especially intolerant of human presence, or where a 50 yard-radius refuge provides insufficient escape cover or alternative foraging opportunities for plover chicks. If nests are discovered outside fenced areas, fencing should be extended to create a sufficient buffer to prevent harm or disturbance to incubating adults, eggs, or unfledged chicks. On some beaches where plovers and terns have traditionally nested or where suitable habitat occurs, it may be necessary to symbolically fence portions of habitat during March or April, prior to plover nesting, or during May, prior to tern nesting, if, in the opinion of the Division, failure to do so could discourage plovers or terns from nesting as a result of disturbance from human use.

Rearing or nursery areas used by unfledged or recently fledged tern chicks, as identified by the Division, should be delineated with posts, warning signs, or symbolic fencing not later than June 21. Only persons engaged in rare species monitoring, management, or research should enter posted or fenced tern nursery areas while unfledged tern chicks or tern chicks being fed by adult terns are present, although individuals may pass by outside these areas. Such nursery areas may be re-opened

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when all tern chicks have fledged and are not being fed by adult terns.

Pets should be leashed and under control of their owners at all times from April 1 to August 31 on beaches where piping plovers or terns are present or have traditionally nested. Pets should be prohibited on these beaches from April 1 through August 31 if, based on observations and experience, pet owners fail to keep pets leashed and under control.

Kite flying should be prohibited within 200 yards of nesting or territorial adult or unfledged juvenile piping plovers or terns, from April 1 to August 31.

Fireworks should be prohibited on beaches where plovers or terns nest from April 1 to August 31.

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Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act

**Northeast Region, U.S. Fish and Wildlife Service
April 15, 1994**

(Also see additional Service guidance on [fireworks](#) and in the [1996 Revised Recovery Plan](#).)

The following information is provided as guidance to beach managers and property owners seeking to avoid potential violations of Section 9 of the Endangered Species Act (16 U.S.C. 1538) and its implementing regulations (50 CFR Part 17) that could occur as the result of recreational activities on beaches used by breeding piping plovers along the Atlantic Coast. These guidelines were developed by the Northeast Region, U.S. Fish and Wildlife Service (Service), with assistance from the U.S. Atlantic Coast Piping Plover Recovery Team. The guidelines are advisory, and failure to implement them does not, of itself, constitute a violation of the law. Rather, they represent the Service's best professional advice to beach managers and landowners regarding the management options that will prevent direct mortality, harm, or harassment of piping plovers and their eggs due to recreational activities.

Some land managers have endangered species protection obligations under Section 7 of the Endangered Species Act (see section I below) or under Executive Orders 11644 and 11989^(I) that go beyond adherence to these guidelines. Nothing in this document should be construed as lack of endorsement of additional piping plover protection measures implemented by these land managers or those who are voluntarily undertaking stronger plover protection measures.

This document contains four sections: [\(I\)](#) a brief synopsis of the legal requirements that afford protection to nesting piping plovers; [\(II\)](#) a brief summary of the life history of piping plovers and potential threats due to recreational activities during the breeding cycle; [\(III\)](#) guidelines for protecting piping plovers from recreational activities on Atlantic Coast beaches; and [\(IV\)](#) literature cited.

I. LEGAL CONSIDERATIONS

Section 9 of the Endangered Species Act (ESA) prohibits any person subject to the jurisdiction of the United States from harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting listed wildlife species. It is also unlawful to attempt such acts, solicit another to commit such acts, or cause such acts to be committed. A "person" is defined in Section 3 to mean "an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or

political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States." Regulations implementing the ESA (50 CFR 17.3) further define "harm" to include significant habitat modification or degradation that results in the killing or injury of wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. "Harass" means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Penalties for violations of Section 9 are provided in Section 11 of the ESA; for threatened species, these penalties include fines of up to \$25,000, imprisonment for not more than six months, or both.

Section 10 of the ESA and related regulations provide for permits that may be granted to authorize acts prohibited under Section 9, for scientific purposes or to enhance the propagation or survival of a listed species. States that have Cooperative Agreements under Section 6 of the ESA, may provide written authorization for take that occurs in the course of implementing conservation programs. For example, State agencies have authorized certain biologists to construct predator exclosures for piping plovers. It is also legal for employees or designated agents of certain Federal or State agencies to take listed species without a permit, if the action is necessary to aid sick, injured, or orphaned animals or to salvage or dispose of a dead specimen.

Section 10 also allows permits to be issued for take that is "incidental to, and not the purpose of, carrying out an otherwise lawful activity" if the Service determines that certain conditions have been met. An applicant for an incidental take permit must prepare a conservation plan that specifies the impacts of the take, steps the applicant will take to minimize and mitigate the impacts, funding that will be available to implement these steps, alternative actions to the take that the applicant considered, and the reasons why such alternatives are not being utilized.

Section 7 of the ESA may be pertinent to beach managers and landowners in situations that have a Federal nexus. Section 7 requires Federal agencies to consult with the Service (or National Marine Fisheries Service for marine species) prior to authorizing, funding, or carrying out activities that may affect listed species. Section 7 also requires that these agencies use their authorities to further the conservation of listed species. Section 7 obligations have caused Federal land management agencies to implement piping plover protection measures that go beyond those required to avoid take, for example by conducting research on threats to piping plovers. Other examples of Federal activities that may affect piping plovers along the Atlantic Coast, thereby triggering Section 7 consultation, include permits for beach nourishment or disposal of dredged material (U.S. Army Corps of Engineers) and funding of beach restoration projects (Federal Emergency Management Authority).

Piping plovers, as well as other migratory birds such as least terns, common terns, American oystercatchers, laughing gulls, herring gulls, and great black-backed gulls, their nests, and eggs are also protected under the Migratory Bird Treaty Act of 1918 (16

U.S.C. 703-712). Prohibited acts include pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting such conduct. Violators may be fined up to \$5000 and/or imprisoned for up to six months.

Almost all States within the breeding range of the Atlantic Coast piping plover population list the species as State threatened or endangered (Northeast Nongame Technical Committee 1993). Various laws and regulations may protect State-listed species from take, but the Service has not ascertained the adequacy of the guidelines presented in this document to meet the requirements of any State law.

II. LIFE HISTORY AND THREATS FROM HUMAN DISTURBANCE

Piping plovers are small, sand-colored shorebirds that nest on sandy, coastal beaches from South Carolina to Newfoundland. Since 1986, the Atlantic Coast population has been protected as a threatened species under provisions of the U.S. Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 1985). The U.S. portion of the population was estimated at 875 pairs in 1993 (U.S. Fish and Wildlife Service 1993). Many characteristics of piping plovers contribute to their susceptibility to take due to human beach activities.

LIFE HISTORY

Piping plovers begin returning to their Atlantic Coast nesting beaches in mid-March (Coutu et al. 1990, Cross 1990, Goldin 1990, MacIvor 1990, Hake 1993). Males establish and defend territories and court females (Cairns 1982). Eggs may be present on the beach from mid-April through late July. Clutch size is generally four eggs, and the incubation period⁽²⁾ usually lasts for 27-28 days. Piping plovers fledge only a single brood per season, but may renest several times if previous nests are lost. Chicks are precocial⁽³⁾ (Wilcox 1959, Cairns 1982). They may move hundreds of yards from the nest site during their first week of life (see [Table 1](#), Summary of Chick Mobility Data). Chicks remain together with one or both parents until they fledge (are able to fly) at 25 to 35 days of age. Depending on date of hatching, flightless chicks may be present from mid-May until late August, although most fledge by the end of July (Patterson 1988, Goldin 1990, MacIvor 1990, Howard et al. 1993).

Piping plover nests are situated above the high tide line on coastal beaches, sand flats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and washover areas cut into or between dunes. They may also nest on areas where suitable dredge material has been deposited. Nest sites are shallow scraped depressions in substrates ranging from fine grained sand to mixtures of sand and pebbles, shells or cobble (Bent 1929, Burger 1987a, Cairns 1982, Patterson 1988, Flemming et al. 1990, MacIvor 1990, Strauss 1990). Nests are usually found in areas with little or no vegetation although, on occasion, piping plovers will nest under stands of American beachgrass (*Ammophila breviligulata*) or other vegetation (Patterson 1988, Flemming et al. 1990, MacIvor 1990). Plover nests may be very difficult to detect, especially during the 6-7 day egg-laying phase when the birds generally do not incubate (Goldin 1994).

Plover foods consist of invertebrates such as marine worms, fly larvae, beetles, crustaceans or mollusks (Bent 1929, Cairns 1977, Nicholls 1989). Feeding areas include intertidal portions of ocean beaches, washover areas, mudflats, sandflats, wrack lines⁽⁴⁾, and shorelines of coastal ponds, lagoons or salt marshes (Gibbs 1986, Coutu et al. 1990, Hoopes et al. 1992, Loegering 1992, Goldin 1993). Studies have shown that the relative importance of various feeding habitat types may vary by site (Gibbs 1986, Coutu et al. 1990, McConnaughey et al. 1990, Loegering 1992, Goldin 1993, Hoopes 1993) and by stage in the breeding cycle (Cross 1990). Adults and chicks on a given site may use different feeding habitats in varying proportion (Goldin et al. 1990). Feeding activities of chicks may be particularly important to their survival. Cairns (1977) found that piping plover chicks typically tripled their weight during the first two weeks post-hatching; chicks that failed to achieve at least 60% of this weight gain by day 12 were unlikely to survive. During courtship, nesting, and brood rearing, feeding territories are generally contiguous to nesting territories (Cairns 1977), although instances where brood-rearing areas are widely separated from nesting territories are not uncommon (see [Table 1](#)). Feeding activities of both adults and chicks may occur during all hours of the day and night (Burger 1993) and at all stages in the tidal cycle (Goldin 1993, Hoopes 1993).

THREATS FROM NONMOTORIZED BEACH ACTIVITIES

Sandy beaches that provide nesting habitat for piping plovers are also attractive recreational habitats for people and their pets. Nonmotorized recreational activities can be a source of both direct mortality and harassment of piping plovers. Pedestrians on beaches may crush eggs (Burger 1987b, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Unleashed dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980).

Pedestrians may flush incubating plovers from nests (see [Table 2](#), Summary of Data on Distances at Which Plovers React to Disturbance), exposing eggs to avian predators or causing excessive cooling or heating of eggs. Repeated exposure of shorebird eggs on hot days may cause overheating, killing the embryos (Bergstrom 1991). Excessive cooling may kill embryos or retard their development, delaying hatching dates (Welty 1982). Pedestrians can also displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993). Fireworks are highly disturbing to piping plovers (Howard et al. 1993). Plovers are particularly intolerant of kites, compared with pedestrians, dogs, and vehicles; biologists believe this may be because plovers perceive kites as potential avian predators (Hoopes et al. 1992).

THREATS FROM MOTOR VEHICLES

Unrestricted use of motorized vehicles on beaches is a serious threat to piping plovers and their habitats. Vehicles can crush eggs (Wilcox 1959; Tull 1984; Burger 1987b; Patterson et al. 1991; *United States of America v. Breezy Point Cooperative, Inc.*, U.S. District Court, Eastern District of New York, Civil Action No. CV-90-2542, 1991; Shaffer and Laporte 1992), adults, and chicks. In Massachusetts and New York,

biologists documented 14 incidents in which 18 chicks and 2 adults were killed by vehicles between 1989 and 1993 (Melvin et al. 1994). Goldin (1993) compiled records of 34 chick mortalities (30 on the Atlantic Coast and 4 on the Northern Great Plains) due to vehicles. Many biologists that monitor and manage piping plovers believe that many more chicks are killed by vehicles than are found and reported (Melvin et al. 1994). Beaches used by vehicles during nesting and brood-rearing periods generally have fewer breeding plovers than available nesting and feeding habitat can support. In contrast, plover abundance and productivity has increased on beaches where vehicle restrictions during chick-rearing periods have been combined with protection of nests from predators (Goldin 1993; S. Melvin, pers. comm., 1993).

Typical behaviors of piping plover chicks increase their vulnerability to vehicles. Chicks frequently move between the upper berm or foredune and feeding habitats in the wrack line and intertidal zone. These movements place chicks in the paths of vehicles driving along the berm or through the intertidal zone. Chicks stand in, walk, and run along tire ruts, and sometimes have difficulty crossing deep ruts or climbing out of them (Eddings et al. 1990, Strauss 1990, Howard et al. 1993). Chicks sometimes stand motionless or crouch as vehicles pass by, or do not move quickly enough to get out of the way (Tull 1984, Hoopes et al. 1992, Goldin 1993). Wire fencing placed around nests to deter predators (Rimmer and Deblinger 1990, Melvin et al. 1992) is ineffective in protecting chicks from vehicles because chicks typically leave the nest within a day after hatching and move extensively along the beach to feed (see [Table 1](#)).

Vehicles may also significantly degrade piping plover habitat or disrupt normal behavior patterns. They may harm or harass plovers by crushing wrack into the sand and making it unavailable as cover or a foraging substrate, by creating ruts that may trap or impede movements of chicks, and by preventing plovers from using habitat that is otherwise suitable (MacIvor 1990, Strauss 1990, Hoopes et al. 1992, Goldin 1993).

III. GUIDELINES FOR PROTECTING PIPING PLOVERS FROM RECREATIONAL DISTURBANCE

The Service recommends the following protection measures to prevent direct mortality or harassment of piping plovers, their eggs, and chicks.

MANAGEMENT OF NONMOTORIZED RECREATIONAL USES

On beaches where pedestrians, joggers, sun-bathers, picnickers, fishermen, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers, their eggs, or chicks, areas of at least 50 meter-radius around nests above the high tide line should be delineated with warning signs and symbolic fencing⁽⁵⁾. Only persons engaged in rare species monitoring, management, or research activities should enter posted areas. These areas should remain fenced as long as viable eggs or unfledged chicks are present. Fencing is intended to prevent accidental crushing of nests and repeated flushing of incubating adults, and to provide an area where chicks can rest and seek shelter when large numbers of people are on the beach.

Available data indicate that a 50 meter buffer distance around nests will be adequate to prevent harassment of the majority of incubating piping plovers. However, fencing around nests should be expanded in cases where the standard 50 meter-radius is inadequate to protect incubating adults or unfledged chicks from harm or disturbance. Data from various sites distributed across the plover's Atlantic Coast range indicates that larger buffers may be needed in some locations (see [Table 2](#)). This may include situations where plovers are especially intolerant of human presence, or where a 50 meter-radius area provides insufficient escape cover or alternative foraging opportunities for plover chicks.⁽⁶⁾

In cases where the nest is located less than 50 meters above the high tide line, fencing should be situated at the high tide line, and a qualified biologist should monitor responses of the birds to passersby, documenting his/her observations in clearly recorded field notes. Providing that birds are not exhibiting signs of disturbance, this smaller buffer may be maintained in such cases.

On portions of beaches that receive heavy human use, areas where territorial plovers are observed should be symbolically fenced to prevent disruption of territorial displays and courtship. Since nests can be difficult to locate, especially during egg-laying, this will also prevent accidental crushing of undetected nests. If nests are discovered outside fenced areas, fencing should be extended to create a sufficient buffer to prevent disturbance to incubating adults, eggs, or unfledged chicks.

Pets should be leashed and under control of their owners at all times from April 1 to August 31 on beaches where piping plovers are present or have traditionally nested. Pets should be prohibited on these beaches from April 1 through August 31 if, based on observations and experience, pet owners fail to keep pets leashed and under control.

Kite flying should be prohibited within 200 meters of nesting or territorial adult or unfledged juvenile piping plovers between April 1 and August 31.

Fireworks should be prohibited on beaches where plovers nest from April 1 until all chicks are fledged. (See the Service's February 4, 1997 [*Guidelines for Managing Fireworks in the Vicinity of Piping Plovers and Seabeach Amaranth on the U.S. Atlantic Coast.*](#))

MOTOR VEHICLE MANAGEMENT

The Service recommends the following minimum protection measures to prevent direct mortality or harassment of piping plovers, their eggs, and chicks on beaches where vehicles are permitted. Since restrictions to protect unfledged chicks often impede vehicle access along a barrier spit, a number of management options affecting the timing and size of vehicle closures are presented here. Some of these options are contingent on implementation of intensive plover monitoring and management plans by qualified biologists. It is recommended that landowners seek concurrence with such monitoring plans from either the Service or the State wildlife agency.

Protection of Nests

All suitable piping plover nesting habitat should be identified by a qualified biologist and delineated with posts and warning signs or symbolic fencing on or before April 1 each year. All vehicular access into or through posted nesting habitat should be prohibited. However, prior to hatching, vehicles may pass by such areas along designated vehicle corridors established along the outside edge of plover nesting habitat. Vehicles may also park outside delineated nesting habitat, if beach width and configuration and tidal conditions allow. Vehicle corridors or parking areas should be moved, constricted, or temporarily closed if territorial, courting, or nesting plovers are disturbed by passing or parked vehicles, or if disturbance is anticipated because of unusual tides or expected increases in vehicle use during weekends, holidays, or special events.

If data from several years of plover monitoring suggests that significantly more habitat is available than the local plover population can occupy, some suitable habitat may be left unposted if the following conditions are met:

1. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:
 - A. Estimates the number of pairs likely to nest on the site based on the past monitoring and regional population trends.

AND

- B. Delineates the habitat that will be posted or fenced prior to April 1 to assure a high probability that territorial plovers will select protected areas in which to court and nest. Sites where nesting or courting plovers were observed during the last three seasons as well as other habitat deemed most likely to be pioneered by plovers should be included in the posted and/or fenced area.

AND

- C. Provides for monitoring of piping plovers on the beach by a qualified biologist(s). Generally, the frequency of monitoring should be not less than twice per week prior to May 1 and not less than three times per week thereafter. Monitoring should occur daily whenever moderate to large numbers of vehicles are on the beach. Monitors should document locations of territorial or courting plovers, nest locations, and observations of any reactions of incubating birds to pedestrian or vehicular disturbance.

AND

2. All unposted sites are posted immediately upon detection of territorial plovers.

Protection of Chicks

Sections of beaches where unfledged piping plover chicks are present should be temporarily closed to all vehicles not deemed essential. (See the provisions for essential vehicles below.) Areas where vehicles are prohibited should include all dune, beach, and intertidal habitat within the chicks' foraging range, to be determined by either of the following methods:

1. The vehicle free area should extend 1000 meters on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting 2000 meter-wide area of protected habitat for plover chicks should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles.

OR

2. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:
 - A. Provides for monitoring of all broods during the chick-rearing phase of the breeding season and specifies the frequency of monitoring.

AND

- B. Specifies the minimum size of vehicle-free areas to be established in the vicinity of unfledged broods based on the mobility of broods observed on the site in past years and on the frequency of monitoring. Unless substantial data from past years show that broods on a site stay very close to their nest locations, vehicle-free areas should extend at least 200 meters on each side of the nest site during the first week following hatching. The size and location of the protected area should be adjusted in response to the observed mobility of the brood, but in no case should it be reduced to less than 100 meters on each side of the brood. In some cases, highly mobile broods may require protected areas up to 1000 meters, even where they are intensively monitored. Protected areas should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles. In a few cases, where several years of data documents that piping plovers on a particular site feed in only certain habitat types, the Service or the State wildlife management agency may provide written concurrence that vehicles pose no danger to plovers in other specified habitats on that site.

Timing of Vehicle Restrictions in Chick Habitat

Restrictions on use of vehicles in areas where unfledged plover chicks are present should begin on or before the date that hatching begins and continue until chicks have fledged. For purposes of vehicle management, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first.

When piping plover nests are found before the last egg is laid, restrictions on vehicles should begin on the 26th day after the last egg is laid. This assumes an average incubation period of 27 days, and provides a 1 day margin of error.

When plover nests are found after the last egg has been laid, making it impossible to predict hatch date, restrictions on vehicles should begin on a date determined by one of the following scenarios:

1. With intensive monitoring: If the nest is monitored at least twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs) by a qualified biologist, vehicle use may continue until hatching begins. Nests should be monitored at dawn and dusk to minimize the time that hatching may go undetected if it occurs after dark. Whenever possible, nests should be monitored from a distance with spotting scope or binoculars to minimize disturbance to incubating plovers.

OR

2. Without intensive monitoring: Restrictions should begin on May 15 (the earliest probable hatch date). If the nest is discovered after May 15, then restrictions should start immediately.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, restrictions on vehicles should begin immediately.

If ruts are present that are deep enough to restrict movements of plover chicks, then restrictions on vehicles should begin at least 5 days prior to the anticipated hatching date of plover nests. If a plover nest is found with a complete clutch, precluding estimation of hatching date, and deep ruts have been created that could reasonably be expected to impede chick movements, then restrictions on vehicles should begin immediately.

Essential Vehicles

Because it is impossible to completely eliminate the possibility that a vehicle will accidentally crush an unfledged plover chicks, use of vehicles in the vicinity of broods should be avoided whenever possible. However, the Service recognizes that life-threatening situations on the beach may require emergency vehicle response. Furthermore, some "essential vehicles" may be required to provide for safety of pedestrian recreationists, law enforcement, maintenance of public property, or access to private dwellings not otherwise accessible. On large beaches, maintaining the frequency of plover monitoring required to minimize the size and duration of vehicle closures may necessitate the use of vehicles by plover monitors.

Essential vehicles should only travel on sections of beaches where unfledged plover chicks are present if such travel is absolutely necessary and no other reasonable travel routes are available. All steps should be taken to minimize number of trips by essential vehicles through chick habitat areas. Homeowners should consider other means of access, eg. by foot, water, or shuttle services, during periods when chicks are present.

The following procedures should be followed to minimize the probability that chicks will be crushed by essential (non-emergency) vehicles:

1. Essential vehicles should travel through chick habitat areas only during daylight hours, and should be guided by a qualified monitor who has first determined the location of all unfledged plover chicks.
2. Speed of vehicles should not exceed five miles per hour.
3. Use of open 4-wheel motorized all-terrain vehicles (ATVs) or non-motorized all-terrain bicycles is recommended whenever possible for monitoring and law enforcement because of the improved visibility afforded operators.
4. A log should be maintained by the beach manager of the date, time, vehicle number and operator, and purpose of each trip through areas where unfledged chicks are present. Personnel monitoring plovers should maintain and regularly update a log of the numbers and locations of unfledged plover chicks on each beach. Drivers of essential vehicles should review the log each day to determine the most recent number and location of unfledged chicks.

Essential vehicles should avoid driving on the wrack line, and travel should be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are creating ruts that could impede chick movements, use of essential vehicles should be further reduced and, if necessary, restricted to emergency vehicles only.

SITE-SPECIFIC MANAGEMENT GUIDANCE

The guidelines provided in this document are based on an extensive review of the scientific literature and are intended to cover the vast majority of situations likely to be encountered on piping plover nesting sites along the U.S. Atlantic Coast. However, the Service recognizes that site-specific conditions may lead to anomalous situations in which departures from this guidance may be safely implemented. The Service recommends that landowners who believe such situations exist on their lands contact either the Service or the State wildlife agency and, if appropriate, arrange for an on-site review. Written documentation of agreements regarding departures from this guidance is recommended.

In some unusual circumstances, Service or State biologists may recognize situations where this guidance provides insufficient protection for piping plovers or their nests. In such a case, the Service or the State wildlife agency may provide written notice to the landowner describing additional measures recommended to prevent take of piping plovers on that site.

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1. Executive Order 11644, Use of Off-Road Vehicles on the Public Lands and Executive Order 11989, Off-Road Vehicles on Public Lands pertain to lands under custody of the Secretaries of Agriculture, Defense, and Interior (except for Indian lands) and certain lands under the custody of the Tennessee Valley Authority.

2. "Incubation" refers to adult birds sitting on eggs, to maintain them at a favorable temperature for embryo development.

3. "Precocial" birds are mobile and capable of foraging for themselves within several hours of hatching.

4. Wrack is organic material including seaweed, seashells, driftwood and other materials deposited on beaches by tidal action.

5. "Symbolic fencing" refers to one or two strands of light-weight string, tied between posts to delineate areas where pedestrians and vehicles should not enter.

6. For example, on the basis of data from an intensive three year study that showed that plovers on Assateague Island in Maryland flush from nests at greater distances than those elsewhere (Loeuring 1992), the Assateague Island National Seashore established 200 meter buffers zones around most nest sites and primary foraging areas (Assateague Island National Seashore 1993). Following a precipitous drop in numbers of nesting plover pairs in Delaware in the late 1980's, that State adopted a Piping Plover Management Plan that provided 100 yard buffers around nests on State park lands and included intertidal areas (Delaware Department of Natural Resources and Environmental Control 1990).

Table 1. Summary of Chick Mobility Data

Source	Location	Data
Patterson 1988 (p.40)	Maryland and Virginia	18 of 38 broods moved to feeding areas more than 100 meters from their nests; 5 broods moved more than 600 meters (distance measured parallel to wrackline).
Cross 1989 (p.23)	Virginia	At three sites, observers relocated broods at mean distances from their nests of 153 m +/-97m (44 observations, 14 broods), 32 m +/-7 m (8 observations, 3 broods), and 492 m +/-281 m (12 observations, 4 broods).
Coutu et al. 1990 (p.12)	North Carolina	Observations of 11 broods averaged 212 m from their nests; 3 broods moved 400-725 m from nest sites.
Strauss 1990 (p.33)	Massachusetts	10 chicks moved more than 200 m during first 5 days post-hatch while 19 chicks moved less than 200 meters during same interval.
Loeuring 1992 (p.72)	Maryland	Distances broods moved from nests during first 5 days post-hatch averaged 195 m in Bay habitat (n=10), 141 m in Interior habitat (n=36), and 131 m in Ocean habitat (n=41). By 21 days, average movement in each habitat had, respectively, increased to 850 m (n=1), 464 m (n=10), and 187 m (n=69). One brood moved more than 1000 m from its nest.
Melvin et al. 1994	Massachusetts and New York	In 14 incidents in which 18 chicks were killed by vehicles, chicks were run over ≤ 10 m to ≤ 900 m from their nests. In 7 of these instances, mortality occurred ≥ 200 m from the nest.

Table 2. Summary of Data on Distances at which Piping Plovers React to Disturbance

Source	Location	Data
Flushing of Incubating Birds by Pedestrians		

Flemming et al. 1988 (p.326)	Nova Scotia	Adults usually flushed from the nests at distances <40 m; however, great variation existed and reaction distances as great as 210 m were observed.
Cross 1990 (p.47)	Virginia	Mean flushing distances in each of two years were 47 m (n=181, range = 5 m to 300 m) and 25 m (n=214, range = 2 m to 100 m).
Loeering 1992 (p.61)	Maryland	Flushing distances averaged 78 m (n=43); range was 20 m to 174 m. Recommended use of 225 m disturbance buffers on his site.
Cross and Terwilliger 1993	Virginia	Mean flushing distance for all years on all sites (Virginia plover sites, 1986-91) was 63 m (n=201, SD=31, range = 7 m to 200 m). Differences among years were not significant, but differences among sites were.
Hoopes 1993 (p.72)	Massachusetts	Mean flushing distance for incubating plovers was 24 m (n=31).
Disturbance to Non-incubating Birds		
Hoopes 1993 (p.89)	Massachusetts	Mean response distance (all ages, all behaviors) was 23 m for pedestrian disturbances (range = 10 m to 60 m), 40 m for vehicles (range = 30 m to 70 m), 46 m for dogs/pets (range = 20 m to 100 m), and 85 m for kites (range = 60 m to 120 m).
Goldin 1993b (p.74)	New York	Average flushing distance for adult and juvenile plovers was 18.7 m for pedestrian disturbances (n=585), 19.5 m for joggers (n=183), and 20.4 m for vehicles (n=111). Pedestrians caused chicks to flush at an average distance of 20.7 m (n=175), joggers at 32.3 m (n=37), and vehicles at 19.3 m (n=7). Tolerance of individual birds varied; one chick moved 260 m in direct response to 20 disturbances in 1 hour.

RESOURCE PROTECTION PARTNERS

The City of Newburyport's efforts to manage the natural resources on Plum Island would not be successful without the help of the following resource protection organizations:

Plum Island Tax Payer's Association (PITA)

PITA is not an official advisory group, but is a "friends group" made up of local residents. One of its missions is to assist with plans and improvements on Plum Island. They help organize volunteers to help with beach clean-ups, dune fence installation, dune grass plantings, and make management recommendations, etc.

Department of Conservation and Recreation

The Department of Conservation and Recreation (DCR) is within the Executive Office of Energy and Environmental Affairs (EOEEA), which has four state agencies organized under it, each with a Commissioner who reports to the Secretary of Energy and Environmental Affairs. DCR consists of three operational Divisions: the Division of State Parks and Recreation; the Division of Urban Parks and Recreation; and the Division of Water Supply Protection. Policy and programmatic support for all operating divisions is provided by five bureaus: Recreation; Ranger Services; Forest Fire Control and Forestry; Special Services and Events; and the Universal Access Office.

DCR's primary mission and legal mandate is the protection of the Commonwealth's natural and cultural resources and the provision of high quality recreational opportunities. DCR is committed to preserving the natural resources of the coastal environment while providing public access and recreation. DCR works extensively with other state agencies, including MassDEP, the Massachusetts Office of Coastal Zone Management (CZM), NHESP, DFW along with other local interest groups, to meet these goals.

Office of Coastal Zone Management

The Massachusetts Office of Coastal Zone Management (CZM) is a part of the Executive Office of Energy and Environmental Affairs (EOEEA). CZM's mission is to balance the impacts of human activity with the protection of coastal and marine resources. As a networked program, CZM was specifically established to work with other state agencies, federal agencies, local governments, academic institutions, nonprofit groups, and the general public to promote sound management of the Massachusetts coast.

Massachusetts Department of Environmental Protection

The Department of Environmental Protection (MassDEP) is the state agency responsible for ensuring clean air and water, the safe management of toxics and hazards, the

recycling of solid and hazardous wastes, the timely cleanup of hazardous waste sites and spills, and the preservation of wetlands and coastal resources. MassDEP is a regulatory agency that is also available to provide technical assistance on environmental matters within its jurisdiction.

Massachusetts Audubon Society: Joppa Flats

Recently the Massachusetts Audubon society opened the doors to their new headquarters located across the Merrimack River in Newburyport. They are willing to assist with the protection and management of rare shorebirds and offers a variety of informational educational sessions.

Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement

The *Natural Heritage & Endangered Species Program* provides training, information and management recommendations relative to the Department's rare species protection measures. The *Environmental Police-Law Enforcement* provides enforcement services for Newburyport staff. Officers assist with boat traffic control, enforcing rules and regulations, monitoring sportsmen licenses and responding to emergencies.

Massachusetts Emergency Management Agency

The Massachusetts Emergency Management Agency assists Newburyport before, during and after major storm events. In particular, MEMA act's as Newburyport's liaison to obtain FEMA money.

The United States Coast Guard

The Coast Guard maintains air patrols over the Massachusetts coastline, including the state's beaches in the Newburyport section of Plum Island. The U.S. Coast Guard Newburyport Station is located on the Merrimack River, just minutes away. They have daily boat patrols during the summer season and assist with emergency rescues, either off shore or on the jetties.

Parker River National Wildlife Refuge

The City of Newburyport is working with the Parker River National Wildlife Refuge (PRNWR) to establish a Memorandum of Understanding (MOU) which will establish protocols for the monitoring and protection of Piping Plovers on Plum Island (Draft version in Appendix I). The MOU has also been reviewed by the U.S. Fish and Wildlife New England Field Office (USFWS).



Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No. 07-01-0523P

The Honorable John F. Moak
Mayor, City of Newburyport
60 Pleasant Street
Newburyport, MA 01950

Community: City of Newburyport, MA
Community No.: 250097

Dear Mayor Moak:

This responds to a February 7, 2007 request from Mr. Michael Goetz, Branch Chief, Region I of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to evaluate the effects that updated flood hazard data for the City of Newburyport would have on the flood hazard information shown on the effective Flood Insurance Rate Map (FIRM) for your community. This letter identifies the submitted data as the best available flood hazard information, which is intended to improve upon that shown on the effective FIRM.

The attached map series, entitled "Newburyport, MA Primary Frontal Dune (PFD) Delineation" dated May 2007, shows the landward extent of the primary frontal dune (PFD) for the City of Newburyport. These maps were prepared by the Massachusetts Office of Coastal Zone Management (MA CZM) for FEMA under FEMA Cooperating Technical Partner (CTP) Agreement No. EMB-2002-CA-0708.

The landward extent of the PFD as shown on this map series is based on the definition of primary frontal dune in the National Flood Insurance Program Regulations (44 CFR 59.1). The maps were created in accordance with the CZM authored report entitled *Technical Report Primary Frontal Dune Delineation: A Geologically Based Quantitative Methodology for Sandy Beaches in Northeastern Massachusetts*, dated March 30, 2006. FEMA has reviewed this document and supporting technical data and determined that it provides a technically and scientifically acceptable method for mapping the primary frontal dunes for the purpose of determining the landward limit of coastal high hazard areas (V Zones) in accordance with the FEMA publication *Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping*. FEMA is currently in the process of incorporating these data into a revised FIRM for your community.

In accordance with Floodplain Management Bulletin 1-98, *Use of Flood Insurance Study (FIS) Data as Available Data* (copy enclosed), we strongly encourage your community to use the aforementioned maps as the best available data for floodplain management purposes until such time as FEMA has issued an official revised FIRM for your community. If the PFD delineation on the work map is further landward than the Zone V boundary on the effective FIRM, then the PFD delineation should be considered the new landward extent of Zone V, and the Base (1-percent-annual-chance) Flood Elevations (BFEs) should be those of the effective Zone V immediately seaward of the PFD. If the Zone V boundary on the effective FIRM extends further inland than the PFD delineation on the attached map, then the effective FIRM should continue to be used to determine the flood zone and BFEs in those areas.


This letter is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State law have been received. In the interest of public safety, State, county, and

community officials, based on knowledge of local conditions and updated studies, are encouraged to set higher standards for construction in the Special Flood Hazard Area, the area subject to inundation by the base flood. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling Kevin Merli, Director, Mitigation Division, FEMA in Boston, Massachusetts, at (617) 956-7573.

If you have any questions regarding this letter, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,



Beth A. Norton, CFM, Project Engineer
Engineering Management Section
Mitigation Division

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Division

Enclosure

cc: Arthur Cleaves, Acting Director, FEMA Region I
Kevin Merli, Director, Federal Insurance and Mitigation Division, Region I
Richard Zingarelli, State NFIP Coordinator, Massachusetts DCR
Bruce Carlisle, Acting Director, Massachusetts CZM

bcc: MBI Case File/07-01-0521P-250103-BADL
MBJ Project File



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
and the City of Newburyport Wetlands Ordinance

051-0829

MassDEP File Number

Document Transaction Number

Newburyport

City/Town

A. General Information

Important:
When filling out
forms on the
computer, use
only the tab key
to move your
cursor - do not
use the return
key.



1. From: Newburyport
Conservation Commission
2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

a. First Name _____ b. Last Name _____
City of Newburyport
c. Organization _____
60 Pleasant Street
d. Mailing Address _____
Newburyport MA 01950
e. City/Town _____ f. State _____ g. Zip Code _____

4. Property Owner (if different from applicant):

a. First Name _____ b. Last Name _____
Massachusetts Department of Conservation and Recreation and the City of Newburyport
c. Organization _____
251 Causeway Street
d. Mailing Address _____
Boston MA 02114
e. City/Town _____ f. State _____ g. Zip Code _____

5. Project Location:

Northern Blvd and Reservation Terrace Newburyport
a. Street Address _____ b. City/Town _____
77 125 and 125-A
c. Assessors Map/Plat Number _____ d. Parcel/Lot Number _____

Latitude and Longitude, if known:

e. Latitude _____ f. Longitude _____

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Essex
a. County _____ b. Certificate Number (if registered land) _____
c. Book _____ d. Page _____

7. Dates: a. Date Notice of Intent Filed _____ b. Date Public Hearing Closed _____ c. Date of Issuance _____

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

"City of Newburyport; Plum Island Beach Management Plan"

a. Plan Title _____ b. Prepared By _____ c. Signed and Stamped by _____
City of Newburyport and Vine Associates n/a
July 2009
d. Final Revision Date _____ e. Scale _____

f. Additional Plan or Document Title _____ g. Date _____



WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
and the City of Newburyport Wetlands Ordinance

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

- a. ☐ Public Water Supply b. ☒ Land Containing Shellfish c. ☒ Prevention of Pollution
d. ☐ Private Water Supply e. ☒ Fisheries f. ☒ Protection of Wildlife Habitat
g. ☐ Groundwater Supply h. ☒ Storm Damage Prevention i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

- a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

- b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and Bank or Bordering Vegetated Wetland boundary (if available)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	a. square feet e. c/y dredged	b. square feet f. c/y dredged	c. square feet	d. square feet



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B. Findings (cont.)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
7. <input type="checkbox"/> Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. <input type="checkbox"/> Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. <input checked="" type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input checked="" type="checkbox"/> Coastal Beaches	a. square feet	b. square feet	c. c/y nourishmt.	d. c/y nourishmt.
14. <input checked="" type="checkbox"/> Coastal Dunes	a. square feet	b. square feet	c. c/y nourishmt.	d. c/y nourishmt.
15. <input type="checkbox"/> Coastal Banks	a. linear feet	b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	a. square feet	b. square feet		
17. <input type="checkbox"/> Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		



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C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
7. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
8. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
9. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]

"File Number 051-0829"



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C. General Conditions Under Massachusetts Wetlands Protection Act

10. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
11. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
12. The work shall conform to the plans and special conditions referenced in this order.
13. Any change to the plans identified in Condition #12 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
14. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
15. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
16. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
17. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

18. **The work associated with this Order (the "Project") is (1) ☐ is not (2) ☒ subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
 - all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
 - any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No
2. The Newburyport Conservation Commission hereby finds (check one that applies):
- a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw

2. Citation

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.



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D. Findings Under Municipal Wetlands Bylaw or Ordinance (cont.)

- b. ☐ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

1. Municipal Ordinance or Bylaw

2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):



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E. Signatures and Notary Acknowledgement

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

7/27/2009
1. Date of Issuance

5
2. Number of Signers

Signatures:

Paul Healy
Stephen Moore
Sal Z...

[Signature]
Mary E. Reilly

Notary Acknowledgement

Commonwealth of Massachusetts County of

Essex

On this *21st* Day

July
Month

2009
Year

Before me, the undersigned Notary Public, personally appeared

the above 5 (five) Commissioners
Name of Document Signer

proved to me through satisfactory evidence of identification, which was/were

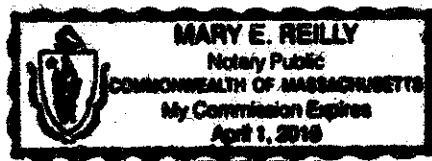
personal knowledge
Description of evidence of identification

to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

As member of

Newburyport
City/Town

Conservation Commission



Mary E. Reilly
Signature of Notary Public

MARY E. REILLY
Printed Name of Notary Public

4/1/2016
My Commission Expires (Date)

Place notary seal and/or any stamp above.

This Order is issued to the applicant as follows:

☒ by hand delivery on

7/27/2009
Date

☐ by certified mail, return receipt requested, on

Date



**Massachusetts Department of Environmental Protection
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F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Section G, Recording Information, is available on the following page.



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G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Newburyport

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Newburyport

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Project Location

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Has been recorded at the Registry of Deeds of:

Essex

County

Book

Page

for:

Massachusetts Department of Conservation and Recreation and the City of Newburyport

Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

7/27/2009

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant