STATEWIDE HABITAT CONSERVATION PLAN

Orleans Request for Certificate of Inclusion (COI)

NAUSET BEACH, 2016

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Contents

1 Site Description

The Nauset Beach Barrier Beach system includes the Nauset Spit, Nauset Public Bathing Beach, and Nauset Beach South. These areas are owned and operated by the Town of Orleans. The area is classified as a Barrier Beach (310 CMR 10.29), a resource area which itself contains the following resource areas: Land Subject to Coastal Storm Flowage (310 CMR 10.02 (1)(d)), Land Under the Ocean (310 CMR 10.25), Coastal Beaches (310 CMR 10.27), Coastal Dunes (310 CMR 10.28), Salt Marshes (310 CMR 10.32), and Rare Species Habitat (310 CMR 10.37).

Nauset Spit

The Nauset Spit is shown on Orleans Assessors' Map 22 and Map 14 , Parcels 76 and 11 and Eastham Assessors' Map 26 and Map 27-A as parcel 26-6. The combined parcels contain 150+/- Acres. This area starts at the Aspinet Road and Inlet Road intersection then from Callanan's Pass onto the over sand corridor to the Town Line and continues in a northerly direction, into the Town of Eastham, to its terminus at the Nauset Inlet.

Nauset Public Bathing Beach

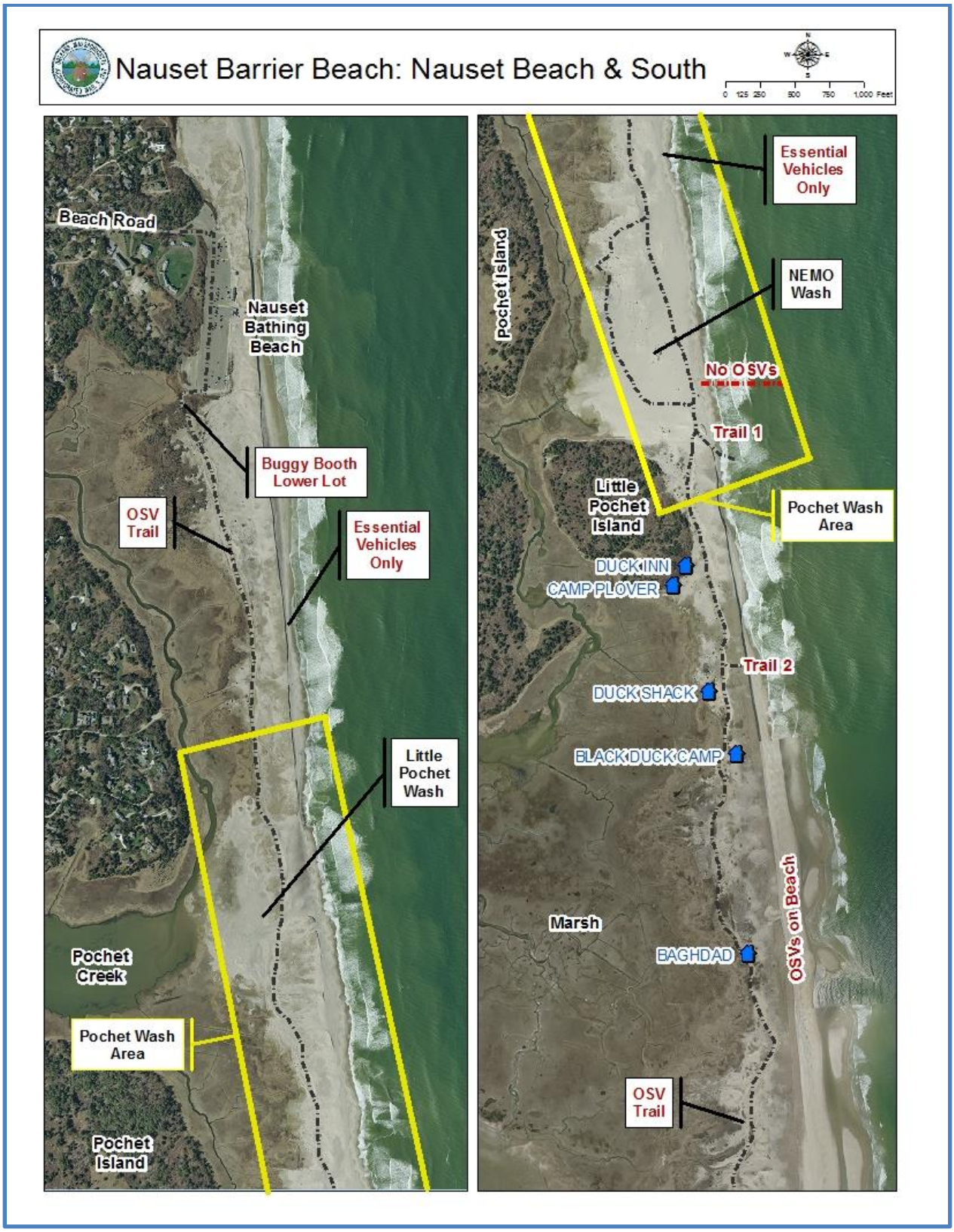
The Nauset Public Bathing Beach is seaward of the Town owned ~900 car parking lot at the end of Beach Road and is located on Orleans Assessors' Map 14 Parcel 11. The public bathing beach is only accessible to pedestrians. The lot contains recreational and administrative infrastructure buildings, including a toll booth, administration building, a privately operated town owned leased concession stand, bath houses and 3 primary recreational foot traffic access points leading to the main public beach.

Nauset Beach South

The area of Nauset Beach South is shown on Assessors' Maps as the following: Map 38, Parcels 13 and 14; Map 45, Parcel 11 and 50; Map 52, Parcel 10; Map 59, Parcel 1; Maps 73, Parcel 1. The combined parcels contain 700+/- Acres of Barrier Beach. This area starts at the end of the existing public beach parking lot, and continues in a southerly direction to the Chatham town line, where the beach extends into Chatham to its terminus.

1.1 Maps

Figure 1: Nauset Barrier Beach Site Maps


Nauset Barrier Beach: Nauset Beach & South
0 125 250 500 750 1,000 Feet
Beach Road
Nauset Bathing Beach
Buggy Booth Lower Lot
OSV Trail
Essential Vehicles Only
Little Pochet Wash
Pochet Creek
Pochet Wash Area
Pochet Island
Pochet Island
Essential Vehicles Only
NEMO Wash
No OSVs
Trail 1
Little Pochet Island
Pochet Wash Area
DUCK INN
CAMP PLOVER
Trail 2
DUCK SHACK
BLACK DUCK CAMP
Marsh
BAGHDAD
OSVs on Beach
OSV Trail


Nauset Barrier Beach: Nauset Beach South
0 125 250 500 750 1,000 Feet
THE HIDE-A-WAY
WAH-LOON-DAH
FORT FREDERICK
Trail 3
COASTIES RETREAT
CAMP NAUSET
OSVs on Beach
OSV Trail
THE CUPOLA CAMP
TIME OUT
TIME OUT
Trail 4
OSV Trail
OSVs on Beach
Orleans
Chatham
Trail 5

1.2 Description of Piping Plover Habitat, Past Population Size and Reproductive Success, Management Issues

The Nauset Barrier System is a wealth of resource areas much of which provide excellent habitat to many species of wildlife. The resource areas previously mentioned, Land Subject to Coastal Storm Flowage (310 CMR 10.02 (1)(d)), Land Under the Ocean (310 CMR 10.25), Coastal Beaches (310 CMR 10.27), Coastal Dunes (310 CMR 10.28), Salt Marshes (310 CMR 10.32), and Rare Species Habitat (310 CMR 10.37) make up the barrier system and within them are rare and unique conditions that provide excellent habitat specifically on the Nauset Spit and Nauset Beach South.

Nauset Spit

Nauset Spit is approximately 2.3 miles in length. The Spit contains Coastal Beaches, Coastal Dunes, Coastal Banks, and tidal creeks. It also lies adjacent to Town Cove, New Island, Stoney Island, Woods Cove, Tern Island, tidal mud flats and saltmarsh. The Spit has been slowly accreting northward into the Town of Eastham. It has also been subject to full breaches and overwash during severe storms and naturally migrates westward.

Nauset Spit contains many wash over areas where tidal storm surge and storm damage have breached through the primary dune system to the west area known as Town Cove. The overwash areas have created nesting habitat as well as foraging areas which allow the Piping Plovers to cross back and forth from the Atlantic Ocean to the Town Cove throughout the day and evening where they can forage on the east and west wrack lines as well as the tidal mud flats on the west side of the Spit. The tidal flats on the Town Cove or west side of the Spit contain abundant food source microorganisms, crustaceans and invertebrates for the Piping Plovers to forage on.

Recreational amenities on the Nauset Spit center on the use of the Spit by over-sand vehicles (OSVs). The Spit is open to use by OSVs in accordance with the DEP Order of Conditions (OOC) SE 54-723. The OOC contains key provisions requiring the protection of the key habitat. It is important to note that all of these habitat areas are required to be identified each year by Town staff by April 1 and delineated by a network of symbolic fencing and signs in order to ensure that the natural habitat is protected from pedestrians and OSVs each year.

New Island located within Town Cove just inside Nauset Spit, is monitored by both National Park Service staff and Town of Orleans staff. Since Orleans staff is on site daily, we conduct daily monitoring of New Island. One (1) nest is typically found on the island each year, but is almost always subject to high tide destruction and/or predator activity. The island is accessible at low tide by red fox and Eastern coyotes.

Nauset Public Bathing Beach

Nauset Beach is a ~3/4 mile long public bathing beach and it is located on the Atlantic facing Coastal Beach east of the public parking lot at the end of Beach Road. The beach is staffed by 3 lifeguard stations that cover roughly .25 mile where most of the pedestrian and beach bathing activity is focused. The

habitat in this area is predominantly Coastal Beach backed by a steep Coastal Dune system that is adjacent to a parking lot that hosts administration and bathhouse facilities. There are no OSVs allowed on this area of the Coastal Beach and the habitat type is not as diverse on this section of the barrier system as compared to north and south. This area does not have a historic nesting population of piping plovers.

Nauset Beach South

Nauset Beach South extends from the bathing beach area some ~4.3 miles to the Town line. The Barrier Beach then continues into Chatham where it's terminus is marked by an inlet into Pleasant Bay that was created in 2007. Nauset Beach South contains Coastal Beaches, Coastal Dunes, Coastal Banks, tidal creeks, Salt Marsh. Nauset Beach South is a true Barrier Beach with the Atlantic Ocean to the east and Pleasant Bay to the west. Nauset Beach South is accessible via OSVs and managed in accordance with an Order of Conditions that governs the use of the OSVs on the beach. Nauset Beach South, like the Nauset Spit, has many areas of overwash that lack dunes and elevation and create excellent habitat and foraging opportunities for nesting shorebirds. Two of the more significant areas of wash are the Little Pochet Wash area and an area south of that referred to as the Nemo Wash (Nor'easter Nemo 2012). Together, these areas are generally referred to as the Pochet Wash area.

The Pochet Wash area begins at Trail 1 on Nauset Beach South and runs .8 mile north just past the Little Pochet Wash at the area adjacent to the Pochet Creek. This area is the location of the OSV corridor which prior to the overwashes was referred to as the "back trail." This section of the OSV corridor provides important access to the front beach and also provides access to the head of the remaining back trail located at the base of Little Pochet Island. The habitat in this area extends as far west as Pochet Creek and Pochet Island and contains large areas of flat Coastal Beach. Vegetation consists of Cape American Beach Grass, Smooth Cordgrass, Slender Glasswort, Seaside Lavender, Salt Marsh Hay, Spikegrass and a variety of typical woody coastal shrubs. The grasses provide excellent habitat for adult plovers, their chicks, and their nests, providing shade and protection from avian predators.

Plovers often nest on the front beach from Little Pochet Wash south to Trail 1. Plovers also nest on the west side of the OSV trail in the large wash over areas. On the west side of the Pochet Wash, several salt marshes are present providing foraging opportunities for plovers. This foraging habitat is bordered by the shores of Little Pochet Island, Pochet Island, and Pochet Creek. These tidal mudflats are rich in food sources for chicks and enable them to thrive and develop. Plovers also feed to the east on the Atlantic Ocean wrack line.

The rest of the Nauset Beach South area consists of the Barrier Beach south of the Pochet Wash to the Chatham Town Line. The area consists of large Coastal Dunes and Coastal Beach. There are 5 historical trails known as Trail 1 through Trail 5 located in Orleans. They provide access to the beachfront from the back trail that runs the length of the Barrier Beach on the west side (landward) of the primary Coastal Dune. There are twelve private camps along the back trail. The historic camps date back to the early 1900s. They are privately owned and all have executed leases with the Town for occupation.

Due to the large dune system that separates the east facing beach where the nests and chicks may be

located, there is no danger presented to foraging adults and their chicks by use of the back trail since the dunes provide a sufficient barrier to plover movement from ocean to the bay. There are typically 3-4 nests established in the areas between Trail 2 and Trail 4 on the front beach. The front beach has been subject to severe erosion in the past few years and the area between Trail 4 and Trail 5 does not allow suitable conditions for plovers to nest because the high tides extend to the base of the dunes.

In summary, Nauset Spit and Nauset Beach South contain ideal piping plover habitat. The average number of piping plover nesting pairs is 20 to 25. Typically 10 to 12 pairs are located in the Pochet Wash, 2-5 pairs are located on Nauset Beach South from Trail 2 to Trail 5 and 1-2 pairs are located approximately north of Callanan's Pass on Nauset Spit. The number of pairs varies annually depending on the rate of predation, level of predator pressure, and amount of significant storm activity during the nesting season.

In the past 5 years the main predators have been large populations of red fox, Eastern Coyotes and American Crows. Nauset's unique habitat of open undeveloped land has contributed to an increased population of Eastern coyotes which have a foraging range of ~15 miles. On the Barrier Beach, they have no other natural predators other than humans who may take advantage of existing hunting laws. Very few coyotes are hunted by humans in the area, allowing their populations to grow year by year since they were first discovered on Cape Cod in the mid-1980s. Additionally, the Nauset Spit contains many south facing slopes ideal for red fox dens. As many as 6-12 adult red foxes have can be seen by staff nightly foraging on the Spit.

Fledge rates on Nauset Spit have been poor in recent years due to predator pressures from red fox, Eastern coyotes and American black crows. In 2014, the fledge rate on the Spit was 0. As a result of this intense predator pressure, plovers abandoned initial nesting attempts in areas 1-4 on Nauset Spit in 2015. Fledge rates were high in the Pochet Wash in 2015. With a total of 17 pairs, down from the average of 20 to 25 pairs, the fledge rate was 3.0 at the Pochet Wash, 2.85 on the Nauset Beach South and 2.85 on Nauset Spit. We attribute this high fledge rate to the aggressive non-lethal predator control program initiated by the Town of Orleans in 2015. ***(See Appendix F)***

For specific productivity numbers for the last five years please ***see Appendix D.***

1.3 Description of Habitat, Population, for Other State-Listed Species

Piping Plovers are not the only listed species present on the Nauset Barrier Beach. State-listed Least Terns (Sternula antillarum) and the occasional Common Tern (Sterna hirundo) nest on these beaches. American Oystercatchers (not listed), Roseate (Federal and State Endangered) and Arctic terns (State Special Concern), Black Skimmers (not listed), and Red Knots (Federal and State Threatened) are typically seen among staging migratory birds. The habitats described above are the same available for all of these species, with the exception of the red knot which is only occasionally found on the beach front and tends to forage on the flats of Pleasant Bay and roost in large aggregations on nearshore bayside flats south of the Chatham town line during high tide.

Least terns occupy similar nesting grounds as plovers. Terns prefer to lay their eggs in shallow depressions in the open sand. They typically arrive by May 15. Nests contain 2-3 eggs. The average

incubation is 21 to 23 days. Eggs are laid from the last week of May to the last week of July. Fledging occurs at 20-23 days. Adults deliver fish to their young. The most common prey for both chicks and adults are silversides smelt (Atherinops spp.) and anchovy (Anchoa spp.) Least Terns construct their nests very close to tide lines and as a result suffer great losses with over wash and/or storm surge. The chicks tend to hide in dune grass, vegetation, and wrack during the day and appear on the Coastal Beach when the adults are actively feeding them. They are subject to predation by black-backed gulls, American Crow, Herring Gulls, avian raptors, Red Fox, and Eastern Coyotes.

Recently, Least Terns have been present in the Pochet Wash. The colony has ranged from 65 pairs to 35 pairs in 2012-2015. They primarily nest and feed on the east side of the OSV corridor. In previous years, there was a Least Tern colony on the Spit that was one of the largest in the Northeast. In 2013, there were 45 pairs on the Spit. In 2014, the Least Tern colony on the Nauset Spit did not develop. In 2015 the number of terns decreased to 35. Chick productivity was moderate but no actual chick count is done based on monitoring individual nests. At one time, it reportedly had 800 nesting pairs.

2 Responsible Staff

2.1 Names and Credentials

Natural Resources Manager, Nathan Sears

Mr. Sears is the Town of Orleans Natural Resources Manager. He has a BS in Natural Resources and Wildlife Conservation, University of Massachusetts at Amherst, 1998. Mr. Sears has worked for the Town of Orleans for 9 Years and reports to the Town Administrator and the Board of Park Commissioners. Mr. Sears is also responsible for reporting to the Orleans Conservation Commission as it relates to beach operations under Order SE 54-723 or Order SE 54-2246.

Beach Director, Robert Bates

Mr. Bates is the Town of Orleans Beach Director. His experience is in Personnel Management and he has held this position for 2 years and has worked for the Town of Orleans since 2012. Mr. Bates is responsible for the daily operation of the Nauset Public Beach. Mr. Bates reports directly to the Orleans Natural Resources Manager.

Natural Resources Officer / Shorebird Specialist, Paul C. Wightman

Mr. Wightman is the Town of Orleans Shorebird Specialist and holds an A.S. in Plant & Soil Science, a B.S. Natural Resource Management & Wildlife Management and Environmental Science, Park Administration; and a Doctorate of Law in the Commonwealth of Mass.

For the past 4 years he has managed the Endangered Species Program (ESP) at Nauset Beach under the direction of the Natural Resources Manager. Mr. Wightman's responsibilities include daily monitoring operations of protected species, keeping daily logs, preparing NHESP Census Forms, endangered species habitat protection, daily management operations to protect and increase species productivity. He is also

responsible for advising the Natural Resources Manager on daily, short term and long term management issues and adherence to the Federal and State Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns and their Habitats MADFW (1993) and U.S. Fish & Wildlife Service (1994).

Seasonal Shorebird Monitor

During mid-May - August 31st, a full time Assistant Shorebird Monitor is employed (40) hours per week.

The Town of Orleans Seasonal Shorebird Monitor is responsible for the following:

1. Locating and identifying endangered shorebird nesting and feeding areas, setting up exclosures, as directed by the Natural Resources Manager, signage, and symbolic fencing, conducting surveys and counts of birds.
2. Working in assigned habitat areas, must be able to: identify piping plover, least and common terns, American oystercatcher, and other shorebird species as required; identify and locate shorebird nesting and feeding areas; and map the identified areas.
3. Data collection and note taking to document nest establishment, egg laying, hatching, predation of nests, chick rearing, and fledgling activities.
4. Set up and maintain signage, symbolic fencing, and protective exclosures such that critical habitat areas are protected from human disturbance.
5. Interact with and educate the public to increase awareness of the birds and nesting/feeding areas.
6. Re-route vehicles around protected areas and escort essential vehicles through protected area as necessary.

In addition, the Town of Orleans employs from 6 to 9 temporary part time HCP Seasonal Shorebird Monitors who's roles are described in Section 4.2.2.

Beach Rangers

Beach Rangers are primarily responsible for code enforcement of all of the required Special Conditions in the Orders of Conditions as well as all of the Nauset Beach Rules and Regulations for ORVs. They report to the Beach Director and Natural Resources Manager. They assist the Shorebird Specialist and the Shorebird Monitors when enforcement of any violations concerning rare and endangered species is required.

Beach Ranger Tim Gould has worked for the Town of Orleans for 31 years as a Lieutenant in the Orleans Police Department.

Beach Ranger Matt Watts has worked for the Town of Orleans for 27 years as a Sergeant in the Orleans Police Department.

Beach Ranger David Young has worked for the Town of Orleans for 5 years.

3 Beach Management Plan

Both the Nauset Spit and Nauset Beach South are managed by the Board of Selectmen who serve as Orleans Park Commissioners. Nauset Spit operates under an Order of Conditions SE 54-723 issued in 1991. Nauset Beach South operates under an Order of Conditions SE 54-2246 issued in 2015. Each Order contains a comprehensive Off Road Vehicle (ORV) and Beach Management Plan that includes adherence to the Massachusetts Division of Fisheries & Wildlife, Natural Heritage and Endangered Species Program, *Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers and Terns and Their Habitat* (1993) ; U.S. Fish Wildlife Service (1994) and compliance with Coastal Resource area performance standards defined in the Massachusetts Wetland Protection Act, M.G.L. c 131 § 40 and 310 CMR 10.00 including 310 CMR 10.37 Protection of Rare and Endangered Species Habitat. ***(See Appendix A and B)***

On the Nauset Beach South, a Low Effect Habitat Conservation Management Plan (HCP) is in effect until 2020 and authorizes a "incidental take" of up to 2 broods (8) plover chicks in the Pochet Wash area ~ .08 at Trail 1 to the Little Pochet Wash. The Town of Orleans and the Town of Chatham have entered into an Agreement to manage Nauset Beach South jointly. ***(See Appendix E)***

3.1 Beach Operations

Beach operations are managed on a daily basis beginning from April through the Columbus Day Weekend. Up to 65+ seasonal employees are hired annually working under the daily supervision and direction of the Natural Resources Manager, the Beach Director and the Assistant Beach Director. Seasonal employees, comprised of lifeguards, EMTs, Beach Rangers, parking attendants, and shorebird monitors, operate out of the Nauset Beach Administration Building. All staff are equipped with radio communications. Video surveillance occurs 24 hours a day over the entire facility. The Nauset Spit OSV program and the Nauset South OSV program incorporate detailed traffic management protocols in order to alleviate OSV congestion. Beach Rangers are responsible for patrolling the entire Nauset Beach and ensuring compliance with the Nauset Beach Rules and Regulations for ORVs. Nauset Beach Rangers are staffed from 9:00 a.m. to 1:00 a.m. daily.

3.1.1 Recreational Activities

The Nauset Barrier Beach system is host to many recreational opportunities. Activities such as the OSV program, surfing, bathing, hiking, bird watching, fishing, hunting, metal detecting and photography are just a few that take place.

3.1.2 Parking & Roads

The Nauset Public Beach parking lot is the primary main parking lot and is accessible from Beach Road. Nauset Spit is accessed via Callanan's Pass, a private road. The OSV access via Callanan's Pass is actively managed in order to alleviate the burden of the OSV Program on the private homes who share the roadway. Traffic attendants are staffed daily at the access and egress points and communicate via hand held radios. Nauset Beach South is accessed from the south corner of the public lot. Prior to arriving at

the Nauset Beach South gate, an OSV must pass through two staffed check stations. The first station is the Nauset Public Beach Toll Booth which is staffed 24 hours a day from Memorial Day to Columbus Day. The second station, the Buggy Booth, is located at the OSV South Lower Lot and is staffed from 8 a.m. to 7 p.m. daily during the summer months. Airing Stations are also available at the OSV South Lower Lot.

3.1.3 Beach Cleaning and Refuse Management

There are several dumpsters provided at the beach and access areas for beachgoers. They are emptied when full and maintained yearly. Visitors are also encouraged through signage and literature to take all trash off the beach. This decreases predator activity. Beach Rangers clean the beaches daily, collect debris, and dispose of it in appropriate containers. No beach raking is allowed or conducted.

3.1.4 Rules and Regulations

The general rules and regulations for Nauset Public Beach, as well as all public beaches in Orleans, are as follows:

1. Absolutely prohibited at any time: ALCOHOLIC BEVERAGES, LITTERING, OPEN FIRES (Unless by permit for cooking purposes only.)
2. BEACHES: Children 12 years of age or younger must be accompanied by a responsible person 16 years of age or older.
1. PARKS: Children 8 years of age or younger must be accompanied by a responsible person 16 years of age or older.
2. No animals or pets will be permitted on the beaches, in the parking areas or in vehicles in the parking areas at any time during the period of the April 1 to Labor Day. No animals or pets will be permitted in playground areas. For rules on dogs specific to the OSV program ***(See Appendix C).***
3. Parties, gathering or entertainment of 10 or more persons in beach or park areas are prohibited except by written permission of the DPW/Natural Resources Director who shall designate areas to be used.
4. Use of town playing fields by groups must have written approval by the DPW/Natural Resources Director or his designee and shall abide by a separate written policy.
5. No kite flying (including drones), ball playing, tossing of frisbees or other objects will be permitted on the beach or in the water except in an area designated by a lifeguard.
6. Fishing, surf-casting, windsurfing and surfboarding shall be permitted only in specified areas. Separate regulations shall apply to the conduct of windsurfers and surfboarders.
7. Scuba diving, skin diving and all other methods of underwater swimming is prohibited in designated swimming areas.
8. Use of rafts, tubes, inflatables and other similar types of flotation devices are prohibited in the waters off Nauset Beach. Use of rafts, tubes, inflatables and other similar types of flotation devices or umbrellas may be prohibited at any beach at the discretion of lifeguards.
9. No selling, advertising or giving away of goods or services will be permitted at any park and beach areas or in the parking lots except by concessionaires under contract with the Town or by written permission of the Park Commission.
10. Closures: The Town of Orleans reserves the right to close areas to swimming for health and safety reasons.
11. The erection of tents, and/or parking of trailers and/or overnight camping or sleeping in park or beach areas is prohibited.
12. No person shall walk or drive over sand dunes or vegetated areas at beach area (use designated trails only). Removal of sand, brush or plants is prohibited in all park and beach areas.
13. Hours: Unless otherwise authorized, the following areas are closed to the general public during these hours : Nauset Beach – 12 midnight to 7:00 a.m.
14. All other beaches and park areas shall be closed to the general public from 1/2 hour after sunset to 1/2 hour before sunrise unless to participate in or observe an authorized entertainment, i.e. fishing, concerts,

etc.

15. Vehicles shall operate at a speed no greater than 15 m.p.h. in any park or beach area and all Massachusetts Motor Vehicle laws shall apply.
16. Parking of vehicles in park or beach areas for more than 16 consecutive hours is prohibited except by permission of the DPW/Natural Resources Director.
17. All vehicles entering Nauset and Skaket Beach parking areas when an attendant is on duty must come to a full stop and be identified at the toll house.
18. Off Road Vehicles: Separate rules and regulations shall apply to the use of ORV's on Nauset Beach, copies are available at the Town Offices and Police Stations of Orleans and Chatham, Nauset Beach during the season and at the Orleans Park Department office. OSVs are prohibited from other beach areas except to store and retrieve fishing gear.
19. Park and beach officials and lifeguards must be obeyed in the enforcement of the above regulations and in any other situation in which the judgement of the lifeguard must be exercised for the protection and safety of persons using the beach facilities.

The OSV programs on both Nauset Spit and Nauset Beach South are subject to detailed Rules and Regulations for ORVs. They are updated annually by the Natural Resources Manager in consultation with the Board of Park Commissioners and the Conservation Commission. ***(See Appendix C)***

3.1.5 Law Enforcement

The Town of Orleans employs 4-5 full time seasonal Beach Rangers. They patrol day and evening shifts and are trained each season on any new regulations or policies which have been adopted by the Park Commissioners. Several of the Beach Rangers are former retired police officers, who have lived and worked in Orleans for decades. They are provided with all necessary equipment, communication radios, and enforce all of the rules and regulations. In addition, the Town has a working relationship with the Massachusetts Environmental Police who are occasionally called in for assistance in more serious violations. The Orleans Police Department also works in close concert with the Beach Rangers.

Patrols are conducted on the Nauset Spit and Nauset Beach South throughout the entire day during May to September. Patrols are conducted from 9:00 a.m. to 4:00 p.m. and from 4:00 p.m. to 1: 00 a.m. The beach is cleared north and south by midnight and the patrol ends at 1:00 a.m. In the off season, a Natural Resource Officer patrols on days and weekends. All Beach Rangers follow the written protocols established by the Natural Resources Manager and Beach Director.

3.1.6 Other Operations

Fireworks are strictly prohibited at Nauset Beach. There is no fireworks program at Nauset Beach. Should an occasional report of fireworks be reported to the police department, officers are dispatched and work cooperatively with Beach Rangers to enforce citations. Education is also provided to anyone using fireworks and their effect on breeding shorebirds. There is a Town sponsored end of season bonfire on Nauset Public Beach which is held after the breeding season in September.

3.1.7 Plover Monitoring and Management (and terns if applicable)

The Shorebird Specialist begins daily shorebird monitoring in the first week of March covering a 40 hour week over the course of 7 days. The Shorebird Specialist also installs symbolic fencing during the month of March that affords him or her the opportunity to walk the entire length of the Barrier Beach. Suitable Plover and Tern nesting habitat is identified and delineated with symbolic fencing in accordance with

the Guidelines. The entire Beach is assessed for plover courtship, and territorial behavior, and early plover activity. Many times the plovers will return to their early scrapes after a period of inactivity or storm over wash. Daily logs are kept and all activity is recorded including identifying possible breeding pairs, territorial behavior, scrapes, foraging range, tolerance to human disturbance, and predator activity.

The Assistant Shorebird Monitor starts full time during the first or second week of May. The Shorebird Specialist reviews the documented activity from the months of March and April. Once the Assistant is briefed over a two week period, non-overlapping schedules are arranged so that the utmost attention can be directed to all the plover activity on the entire beach. Because plover tracks are most visible in the early morning and evening hours, the two Monitors split their shifts to cover these time periods daily. Monitoring occurs with the two full time monitors 7 days per week. Notes, photographs, and daily log entries are organized in a log book.

The Natural Resources Manager is consulted daily with updates and weekly summaries are provided on all plover activity. In order to carry out their monitoring duties, monitoring staff are equipped with computers containing GPS programs and Excel Spreadsheet programs to record daily activities, identify trends, and provide interpretation for the Annual NHESP Census. Due to the length of the beach, monitors are provided with 4x4 compact utility vehicles that are easily maneuverable on the beach.

3.1.7.1 Symbolic Fencing & Signage (e.g. locations and timing)

Each year the Natural Resources Manager, Conservation Agent and Shorebird Specialist meet with representatives from MADFW/NHESP staff to review the symbolic fencing installed prior to April 1 and identify additional potential areas of plover and tern habitat. Fencing locations are examined and adjusted based on input from all parties. As indicated in the Beach Management Plans, Orleans has been following the criteria from the *Massachusetts Barrier Beach Guidelines* and the *State and Federal Guidelines for Managing Recreational Activates in Piping Plover and Least Tern Habitat.* Fencing is adjusted periodically to increase buffer zones to nesting plovers and terns.

3.1.7.2 Other Management (e.g. vegetation, predator control, exclosures)

The Natural Resources Manager and Shorebird Specialist use predator exclosures on a discretionary basis, subject to a permit issued by MADFW. The Standard type “A” exclosure is used. Installation of Exclosures is carried out in accordance with the USFWS guidelines.

Once a clutch reaches 3 eggs, the Natural Resources Manager, Shorebird Specialist, and Shorebird Monitor, and in some cases the MADFW staff consult on whether the nest should or should not be exclosed. The criteria for exclosing are based on accepted practices and experience with exclosures and are listed below:

- Tolerance to human activity
- Relationship of location to ongoing OSV corridors
- Consistent shared incubation
- Location of nest, i.e. on a dune slope or face which present issues and risk of abandonment
- Is nest in area where the pair has to fly in order to enter exclosure creating risk of abandonment

- Historic or active predator activity
- Proximity to other ongoing recreational activity

On the Nauset Beach South front beach from Trail 1 to Trail 5, the Coastal Beach habitat is backed by a large primary dune. In these areas we have found the use of exclosures almost always results in abandonment and/or predation. The regularity of high tide cycles diminishes the foraging habitat of the Coastal Beach. This narrow corridor enables coyotes and red fox to easily encounter the exclosure as they forage on the front beach. Because of these conditions, exclosures are generally not used on this area. The presence of avian predators identified in the area of a plover nest may factor into whether an exclosure is used or not.

In 2016, Orleans will to continue the non-lethal predator control program that was initiated in March 2015. A series of baited decoy electrified exclosures will be deployed on the beach with the purpose of modifying the behavior of targeted smart predators who have learned to associate the plover exclosures with a food source. Decoy exclosures will be deployed in March. The decoy electrified exclosures will be regularly baited and monitored through the Fall. The locations of the decoys will be changed periodically and track analysis and predator behavior will be recorded daily. For more detail please ***See Appendix F.***

No vegetation management occurs on the Barrier Beach.

3.1.7.3 Frequency

Monitoring occurs daily during dawn and dusk hours 7 days per week. Monitors meet at the end and beginning of their shifts to discuss the daily observations and to share the most recent observations and activity. This allows monitors to share observations that are unique to a specific time of day. i.e ability to locate tracks in the lower light that might be obscured in the mid-day sun. It also allows monitors to observe the behavior of the pairs over the course of the entire day as well as help determine their foraging range. Daily observations are relayed to the Natural Resources Manager.

3.1.7.4 Shorebird Data Collection and Recording Protocols

Attached is a copy of the Shorebird Monitoring Daily Log Report and Nest Observation Form. The daily log contains a narrative of the plover and tern activity. Each Monitor reads the other Monitor's comments daily. They compare notes and observations, discuss trends, movement, and behavior. The information contains specific dates on egg counts, occurrence, exclosures, and predator activity.

3.1.7.5 Data reporting

Logs are maintained to document timing and frequency of activities such as installation of symbolic fencing, monitoring of plover activity, beach patrols, enforcement of ordinances such as leash rules, timely implementation of temporary prohibitions on non-essential vehicle use. In addition to daily logs, daily spread sheets, and GIS data are also kept. A nest data summary sheet is posted and consulted which shows all relevant dates including dates eggs appear, predation issues, nest failure, predicted hatch dates, and chick fledging rates. All nest data recoded on the GIS is available via cloud server with one workstation in the Administration Building and one tablet in the field. As required in the Compliance Monitoring section of the HCP, all logs will be made available to MADFW upon request.

In conclusion, Nauset beach management and monitoring is carried out in accordance with state and federal Guidelines in order to avoid take of breeding Piping Plovers and Least Terns (and Common Terns should they breed). Although some pedestrian and OSV disturbance of migrating and staging shorebirds, may occur, this is not expected to result in take. MADFW will issue a final take determination pursuant to 321 CMR 10.18 prior to issuance of a COI for Nauset Beach. Proposed OSV use has some potential to result in take of the Least Tern and Diamondback Terrapin so proposed impact minimization and mitigation procedures for these species are discussed below.

4 Covered Activities

4.1 Proposed HCP Covered Activities

The Town of Orleans is requesting a three year COI that would expose up to two piping plover broods (or one nest and one brood) to covered activities. Unfledged broods would be exposed to escorted OSVs and the nest would be exposed to beach activities with a reduced symbolic fence buffer and or nest moving as the need arises (see below). In 2015 there were 17 breeding pairs on Nauset Beach (north and south), so this request for take exposure would impact 2 of 17 broods (11.8%), less than the 15% maximum prescribed in the HCP. Should the population decline to <14 pairs, the Town is aware that MADFW may require the number of take exposures in the subsequent beach season to be reduced to one, during the three-year COI term, as set forth in the HCP. All other management will be implemented in accordance with state and federal guidelines as described above *(see section 4.1.7)*, as has been the case for the past 20 years or more.

The area where the monitoring and escorting program for continued OSV use in the presence of unfledged chicks is likely to occur is known as the Pochet Wash on Nauset Beach South. This area includes the "Little Pochet Wash" which is adjacent to Pochet Creek as well as the "Nemo Wash" which is adjacent to Pochet Island. Geographically the area known as the Pochet Wash begins at Trail 1 on Nauset Beach South and runs north .8 mile. However, as described below the area of potential OSV escorting could be shifted as the need arises (e.g. to Nauset Spit) provided that all the minimization protocols are implemented and provided that the limit on total, site-wide take exposure is not exceeded.

The Pochet area is located approximately three-quarters of a mile south of the Nauset Public Beach and is the only means of access to the majority of available area of Nauset Beach South via OSV. Nesting and related piping plover activity in this 0.8 mile long area is the primary reason for what has evolved into a predictable annual complete OSV access closure on Nauset Beach South. These closures related to piping plover prevent OSV access to approximately five (5) miles of beach located between the Pochet Wash and the southern end of Nauset Beach South in the Town of Chatham. Currently, when piping plover protection mandates complete closure of the Pochet Wash to OSV access, OSV use on the remaining portion of the five (5) mile area south of Pochet would otherwise be in compliance with all protective guidelines.

One of the problems this HCP is seeking to address is the repeated closure of OSV access to the majority

of Nauset Beach South from mid-July through August. The length of beach that is unavailable to OSV use is considerable and results in very limited numbers of pedestrians that are able to access Nauset Beach South. The only reliable means of access to the majority of Nauset Beach South is via the OSV trail that has been affected by the annual .8 mile "pinch point" closure that occurs when late nesting plovers and their young are present in the Pochet Wash area. Without OSV access, the majority of the public is unable to reach the 5 miles of available beach. Recreational users who are unable to visit much of Nauset Beach South include anglers, birders, family beach goers, children, the elderly and persons with disabilities for whom walk-on access is simply an unrealistic option.

The Town of Orleans is proposing to obtain ability for a reduced symbolic fencing buffer around a nest, and nest-moving of the same nest on the Nauset Spit, as necessary to keep Callanan's Pass, a major beach access point, open. Nauset Beach Staff anticipate that in 2016 a nest may appear at the base of Callanan's Pass. Callanan's Pass is the only deeded access (easement) to the Nauset Spit. This has occurred in previous years and has resulted in closing the entire Spit. Throughout the months of June – August, the average number of vehicles on Nauset Spit is 150-200. The area is extremely popular and has served Orleans residents for many decades. In 2012, a nest which appeared at the base Callanan's Pass hatched and shut down the entire spit on the 4th of July weekend. This brood and the remaining broods on the Spit resulted in a compete closure of the Spit from July to the end of August. (See Table A).

Table A. Nauset Spit OSV Closure 2007 -2015

Year	Date of Closure	Date Re-opened	Number days Closed
2007	6-June	11 -Aug	66
2008	31-May	15-Aug	77
2009	30-May	16-Aug	77
2010	6-June	18-Aug	83
2011	31-May	15-Aug	77
2012	2 July	14-Aug	43
2013	26-May	15-Aug	91
2014	-	*	*
2015	-	*	*

Additionally in 2012, a late nest hatched in the Pochet Wash area in July just as the chicks which had closed Nauset Beach South in June were fledging. This combination of hatching nests in the first week of June on Nauset Beach South coupled with the late nest and the Callanan's Pass nest resulted in the extensive closures of the entire OSV program that season. The 2012 closures were the catalyst for the development of the existing Orleans Low Effect HCP. (See Table B)

TABLE B: South Trail OSV Closure at Pochet Wash, 2006 -2014

Year	Date of Closure	Date Re-opened	Number days Closed
2006	22-Jun	25-Jul	33
2007	22-Jun	1-Aug	40
2008	16-Jun	24-Jul	38
2009	30-May	4-Aug	66
2010	27-May	9-Aug	74
2011	3-Jun	5-Aug	63
2012	6-Jun	14-Aug	69
2013	3-Jun	23-Aug	81
2014	11-Jun	15-Aug	65
2015	4-June	Open July 26 HCP	52

If a pair attempts to establish a nest on Nauset Spit adjacent within or adjacent to the main access corridor, it may be necessary to request a symbolic fencing buffer well below 50 yards and/or nest moving *(see Section 5.2.2.1.3)*. If this occurs, the Town would follow the Guidelines established by MADFW.

Additionally, The Town of Orleans is requesting a three year COI for the ability to escort vehicles in the vicinity of Least Tern chicks and nesting Diamondback Terrapins. Least Terns are listed as a species of *Special Concern* in Massachusetts. They return each year in May –and migrate south in late August early September. Egg clutch size is 2-3 eggs and they fledge in 21-13 days. They prefer to nest in flat washout areas. The chicks a semi-precocial and are fed by the parents. They are not as mobile as Piping Plover chicks. The will hide in dune grasses or in vegetation during the day and emerge to be fed by the parents. As they mature they move seaward onto the coastal beach and the edge of the ocean.

Since 2013 a Least Tern colony has appeared in the Pochet wash area. A single colony or sub-colonies defined as (20) pairs may develop in an area that is less than 2 acres. However the colony appears to be one connected group. The location of the colony begins at the southern edge of the Little Pochet wash and continues north along the Coastal Beach, landward of the toe the Coastal Dunes and terminates 200 yards south of Trail 1. The size has varied from an estimated 65 pairs in 2013 to 35 pairs in 2015.

Female Diamondback Terrapins are present, depending upon weather conditions, in *June* and *early July* during full moon tides cycles. Unlike most other turtles, terrapins nest during the day and night. Females may lay two clutches of 8 and 12 eggs each season. A single female may lay 1-3 nests per year. Terrapins can be found emerging from adjacent salt marshes just south of the Little Pochet wash over at the western high tideline and marsh edge, traveling all the way east to the ocean side. Their tracks crossing exposed low tidal areas and crossing the OSV corridor. Once they cross the OSV corridor or flats they enter dense vegetated areas, in search of a suitable nest site. Nest sites can be in open areas but

are more often located in dense vegetated areas making them hard locate. In most cases there tracks are easily identifiable in the loose gravel sand emerging from the marsh heading across tidal flats to OSV corridors. They continue traveling east to lay their egg clutch close to the OSV corridor where they enter dense areas of vegetation of American Beach Grass. Females typically nest approximately two (2) weeks apart. They are so skilled at covering their nests, it takes a skilled individual with the proper handling permit locate nests. They female use her nose to test for moisture, soil consistency and whatever else they want for their nest when choosing a nest site.

Because small numbers of Diamondback Terrapins cross the OSV corridor to nest, there is some risk of adult and hatchling mortality as individual turtles cross the OSV corridor. Therefore, the Town is proposing a program of daily terrapin monitoring during nesting season, protecting nests from predators, and headstarting in cooperation with the Town of Barnstable.

4.2 Detailed Protocols for Covered Activities

4.2.1 OSV Use in the Vicinity of Unfledged Piping Plover Chicks.

The Orleans IAMP will include the following elements, as described in the statewide HCP:

1. Delineate and fence narrow travel corridor with no parking near chicks.
2. Travel restricted to 6 hours/day; at preset times of day; daylight hours.
3. Intensive monitoring of chicks during vehicle passage.
4. Self- escort of vehicle or trained staff escorts caravan of up to 50 vehicles.
5. Staff training, enforcement, and communication protocols.
6. Mandatory OSV operator education.
7. Vehicle ruts will be smoothed out at least once/day when young chicks are present.

Under the HCP, the number of vehicles that will be able to access Nauset Beach South (drive past unfledged chicks) has been reduced from 375 vehicles allowed under the OOC to 180 vehicles. This reduces the maximum number of vehicle passes in the vicinity of no more than two broods of piping plover chicks from 750 passes per day to 360 passes per day.

The number of vehicles allowed to pass plover chicks was set at not more than 180 in order to reduce the likelihood of a take by ensuring a manageable number of vehicles that may be self-escorted during the time allotted for beach access. To further reduce the likelihood of a take through harm, harassment or mortality of recently hatched chicks, escorting will be initiated past a brood no sooner than 24 hours after all chicks have hatched.

4.2.1.1 Vehicle Escort Program

The Town of Orleans vehicle escort protocol is administered by the Orleans Natural Resources Manager and the Orleans Beach Director. The protocol is as follows:

Start date: No Specific Start Date annually; Natural Resources Manager must notify MADFW at least 24 hours in advance of initiating the program.
Frequency: Three times daily (times may be flexible within one hour based on weather and chick locations)
Morning Session: 08:00 – 10:00
Mid-Day Session: 12:00 noon - 2:00 p.m.
Afternoon Session: 16:00 – 18:00 (upon written notice to MADFW, the beach operator may change the designated travel times provided that they total no more than six hours in up to three travel windows during daylight hours)
Number of vehicles: 180 self-escorted vehicles for a maximum of 360 vehicles.

4.2.1.2 Self-Escort OSV Corridor Dimensions and Locations

The specific location of the self-escort OSV corridor is intended to be adaptive and variable to reflect the location of the brood(s). The self-escort OSV corridor may shift north or south along the identified route depending on piping plover locations and/or movements. The self-escort OSV corridor(s) will not exceed 4,000 feet in length and 15 feet in width (for vehicle traffic*)*, with occasional turnouts for two-way traffic for a total impact area of approximately 60,000 square feet or 1.38 acres. Additionally, 100 feet laterally on either side of the OSV sand trail will be included in the corridor as the "safety zone" for plover chicks (vehicle traffic will be halted should plover chicks enter this zone).

The self-escort corridor will not be moved laterally and will be clearly marked at the beginning and termination points and will have the 15-foot travel width periodically delineated with wooden stakes. Updated corridor boundaries shall be reported daily to the Natural Resources Manager, Beach Director, or their designee, by shorebird monitor(s) prior to commencement of vehicle access and remarked as necessary.

4.2.1.3 Personnel (monitors) and Required Qualifications:

The Town of Orleans employs up to 9 temporary part time HCP Seasonal Shorebird Monitors that are responsible for all of the same tasks of a Shorebird Monitor (see Section 4.2.2). The Shorebird Specialist and the Seasonal Shorebird Monitor are responsible for training the HCP monitors in locating the plovers and identifying their nests and chicks. Prior to implementation of covered activities, HCP monitors are given approximately two weeks to learn the habits and territories of the plovers on Nauset Beach so that they are able to efficiently locate and identify the plover chicks and adults during the HCP. Monitors are also trained in all the HCP Procedures and Conditions so that they can effectively provide outreach education and enforcement to the beachgoers. These monitors report to the Shorebird Specialist and the Beach Director.

The HCP Monitoring Protocols as described in this document will be utilized to cover the use of OSVs in the presence of unfledged chicks for one or two of the authorized incidental take exposures.

Up to nine or more HCP monitors will be hired and trained beginning on or before July 1st. Training will occur for a period of approximately 1-2 weeks until staff is confident that all the HCP monitors are capable of monitoring the HCP broods and adults. The training and monitoring will focus on minimizing

the disturbance to the broods during the access windows. Monitors will have to demonstrate that they can find tiny chicks and track their movement from a distance without interfering with their natural behavior. Monitors will also be trained in all the HCP Procedures and Conditions so that they will be able to effectively provide outreach education and enforcement to all the beachgoers.

Each Monitor will keep a separate daily observation log and sketch map to record the activity of the adults and the chicks specific to foraging, territorial behavior, and habitat use relative to the location of the OSV corridor. Monitoring will also include recording the need for increased signage or fencing to afford greater protection to the HCP brood(s). The monitoring logs and maps will be reviewed daily by the Shorebird Specialist and Assistant Shorebird Monitor.

Monitors will be equipped with radios for communications with Beach Rangers, the Beach Director, full time monitoring staff, and the Natural Resources Manager. Orleans provides all necessary equipment including binoculars, daily log sheets, rain gear, and transportation. If it is decided that an incidental take will be applied to one or more broods, then HCP staff will begin HCP self-escort monitoring 24 hours after the last egg has hatched from the specified brood. The monitors will follow their assigned schedules and the daily HCP monitoring shifts will begin. The morning shifts will be from *6:30 a.m. – 2:30 p.m.* and the afternoon shifts will be from *2:00 p.m. – 7:30 p.m*. Two to three monitors will be staffed for each shift depending on the number of broods involved. One monitor will be responsible for keeping visual contact with each brood, one monitor or a Beach Ranger will be responsible for policing the self-escort corridor, and one monitor will be staffed at the entrance gate. All monitors will be responsible for assisting in locating the chicks prior to opening the self-escort corridor during the specified access and egress windows. See sample schedule below:

	Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
6:30a-2:30p	Leah/Alexis/ Jamien	Alexis/Steph Jamien	Steph/Alexis/ Jamien	Alexis/Steph/ Jamien	Susan/Rachel Kevin	Rachel/Susan Kevin	Leah/Alexis/ Jamien
2:00p-7:30p	Rachel/Steph/ Kevin	Steph/Len Kevin	Chris/Steph/ Paul	Kevin/Len/ Paul	Chris/Len/ Paul	Leah/Chris/ Paul	Susan/Rachel/ Paul

Nauset Beach Rangers will be on duty from 7:30 a.m. – 1 a.m. daily during the HCP self-escort program. The monitor staffed at the entrance gate will be responsible for ensuring that all over-sand vehicles participating in the HCP are in possession of a signed copy (by the operator) of the *HCP Procedures and Conditions* and that they are fully aware of the protocols. The gate monitor will also be responsible for recording the over-sand vehicle activity (# of passes) in the daily log. Signage reiterating the *HCP Procedures and Conditions* will be displayed at the gate. Once the brood monitor has confirmed the corridor is clear prior to the scheduled self-escort windows, the Nauset Beach Ranger will be responsible for the opening and closing of the self-escort gates and enforcing the rules and regulations. The Nauset Beach Ranger will also be responsible for clearing the beach of vehicles and raking the ruts with a mechanical beach drag at the end of the afternoon egress window (unfledged chicks will be located and monitored during rut smoothing).

HCP Shorebird Monitors
Their duties are described as follows:

- Working in assigned habitat areas, must be able to: identify piping plovers, least and common terns, American oystercatchers, and other shorebird species as required; identify and locate shorebird nesting and feeding areas; and map the identified areas.
- Data collection and note taking to document nest establishment, egg laying, hatching, predation of nests, chick rearing, and fledgling activities.
- Set up and maintain signage, symbolic fencing, and protective exclosures such that critical habitat areas are protected from human disturbance.
- Interact with and educate the public to increase awareness of the birds and nesting/feeding areas and ensure compliance with the HCP procedures and conditions.
- Re-route vehicles around protected areas and escort vehicles through protected area as necessary.
- Assist the Lead Shorebird Monitor in field surveys and bird counts.
- Provide clear concise data summaries of nesting activities to the Lead Shorebird Monitor for inclusion in annual reports.
- Performs other duties as assigned and in conjunction with other Town departments and employees.

The HCP Shorebird Monitor shall have the following minimum qualifications:

- A high school diploma or equivalent.
- Ability to gain a working knowledge of State and Federal Guidelines for the protection of Piping Plovers, Least and Common Terns, and American Oystercatchers on multi-use recreational beaches.
- Good observational skills.
- Ability to perform physical labor associated with the placing of posts, signage, symbolic fencing, and protective exclosures in habitat areas.
- Ability to walk up to 1-3 miles per day within habitat area for survey and protection activities.
- Knowledge and experience, or willingness to obtain, with four wheel drive vehicles, small boat handling, and two-way radio communications.
- Ability to work independently with little direct supervisory oversight.
- Strong people skills, team oriented, and ability to work in a collaborative, problem-solving approach.
- A valid Massachusetts driver's license.

4.2.1.4 Self-Escorting Procedures

Basic Procedures for Escorting Past One Brood

1. A pre-determined area of the Nauset Public Beach parking lot, or other area free of protected species, will be identified for staging of OSVs.
2. At least 1 hour prior to commencement of vehicle escorts, the shorebird monitor(s) will proceed along the designated vehicle route and surrounding area to determine locations of plover chicks. Each shorebird monitor will be responsible for monitoring the location of one brood. Once the shorebird monitor(s) have established the locations of chicks, they will notify the Natural Resources

Manager, Beach Director or their designee of the brood locations and the self-escort corridor will be delineated with highly visible markers. At this time, personnel at the entrance booth, as well as the vehicle monitor will be notified that the OSV trail is open for travel. In the event that all chicks are not located, opening the OSV trail will be delayed until such time that all chicks are accounted for or it has been determined by the shorebird monitor(s) that there are no chicks in the OSV trail. The shorebird monitor(s) will communicate their determination(s) to the Natural Resources Manager for confirmation to open the trail. The self-escort duration of two hours will be implemented per the HCP protocols although the time of closing may be adjusted accordingly to respond to a later opening.

3. Prior to opening the OSV trail, the vehicle monitor will contact the shorebird monitor(s) to confirm that the locations of all chicks are still being monitored, that all chicks are accounted for, and/or it is safe for the trail to open. During the two-hour self-escort period, monitor(s) shall maintain constant visual on any plover chicks using binoculars from a distance of no less than 200 feet. Disturbance, if any, of the chicks shall be minimized. Once vehicles have passed through the delineated "chick zone", which shall extend at least 200 feet past the closest chick, vehicles may proceed to use the sections of beach previously determined to be free of piping plover and least tern chicks, in accordance with state and federal Guidelines (including but not limited to restrictions on parking within 200 m of unfledged chicks; some exceptions apply, see Guidelines).
4. Each vehicle must have at least one passenger 16 years of age or older to walk approximately 10 feet in front of the vehicle in the self-escort corridor. The escort will look for chicks in the road and stop the vehicle if either a chick is observed or one of the monitors (shorebird or vehicle monitor) requires the vehicle to stop. All self- escorted vehicles must maintain a safe distance of at least 15 feet from the vehicle in front.
5. In order to avoid adverse effects to the habitat and allow unimpeded chick passage across the OSV corridor when vehicles are not present, the vehicle "ruts" will be raked at the end of the afternoon self-escort period. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks.
6. If at any time during the escorting process, the shorebird monitor(s) lose visual contact with one or more chicks, the vehicles will be allowed to continue on their way and the period between the self-escort time frame (or after the afternoon session) will be used to determine the presence of the chick(s) in the area or absence of chicks in the corridor. Shorebird monitors will document in the daily report the approximate time that visual contact with the chick(s) was lost and efforts made to relocate it.
7. The Natural Resources Manager, Beach Director, and each individual shorebird monitor will have the independent authority to temporarily close the trail at any time for any reason. For example, if at any time a shorebird monitor determines that chicks have approached within 100 feet of the self-escort corridor, the monitor will immediately notify the gate and corridor monitors by radio to temporarily halt traffic and allow the chicks to cross the corridor and/or move >100 feet from it. The OSV trail will not reopen until the Natural Resources Manager or Beach Director determines that it is safe to do so. Monitors will document in the daily report the approximate time that the OSV trail was closed and the duration of the closure.

Basic Procedures for Escorting Past Two Broods

The following procedures are in addition to applicable actions outlined under Basic Procedures for Escorting Past One Brood (see above):

1. Two broods in close proximity (<1,200 feet apart): Only one segment of the OSV trail will require self-escorting due to the close proximity of the two broods and a single vehicle monitor

will ensure compliance. Two shorebird monitors will be deployed to monitor the chicks; one for each brood. The corridor in front of the broods will have beginning and end points clearly marked for self-escorting and the monitors will follow each brood. The shorebird monitors and vehicle monitor will be in close communication to ensure that chicks are not moving towards the OSV trail.

2. Two broods are more than 1,200 feet apart: Two segments of the OSV trail will require self-escorting. In this case, a second vehicle monitor will be assigned to monitor escorting compliance. Both sections will have beginning and end points clearly marked to delineate the separate self-escort corridors. Beginning and end points of the self-escort corridor may be moved in response to linear chick movements (information provided by the shorebird monitors). Two shorebird monitors will be deployed to monitor the chicks; one for each brood.

Caravans

The Town reserves the right to substitute escorted caravans for self-escorting as described in the HCP. Under this scenario, groups of up to 50 OSVs would stage in the parking lot or other areas free of unfledged chicks and protected species. Once the caravan reaches the area where unfledged chicks are present and escorting is required, a trained and qualified shorebird monitor (see requirements above) would lead the caravan through the escort area either on foot or in an open top OSV. All other requirements including but not limited to brood monitors, compliance monitors, and speed limits would remain in place as described in the self escorting protocols.

Contingency Plan

Personnel availability

Two shorebird monitors *(i.e*., one monitor per brood) will locate and observe chicks prior to and during the self-escort periods. A minimum of one vehicle monitor will oversee the self-escort corridor to ensure compliance by the self-escorted vehicles. Should two self-escort corridors be required (see above) then a second vehicle monitor will be required. In the event that one of these employees is unavailable, the Natural Resources Manager, Beach Director or their designee shall assume this duty.

Inclement weather

The Natural Resources Manager, Beach Director or their designee, will monitor weather forecasts on a daily basis. In the event that a storm warning is predicted by the National Weather Service, or any other weather warning that could jeopardize public safety within a 24-hour period, the OSV trail shall be closed for the duration of the hazard or the start time may be moved one hour later or earlier. The OSV trail may not reopen until the Natural Resources Manager, Beach Director or their designee has given the all clear. It shall be presented in writing prior to purchasing an OSV sticker that all users shall use the beach at their own risk. Exiting escorts will not take place due to unpredicted weather. OSV sticker holders shall be informed in writing that a “shelter in place” policy will go into effect until the inclement weather has passed, or scheduled exiting escorts have begun.

Medical or family emergencies

OSV sticker holders shall be advised verbally and in writing at the time of OSV sticker application, via affidavit, that egress from the beach outside of the self-escort windows shall be strictly prohibited (see permit Rules and Regulations for information to report an emergency). In the event of a life-threatening medical emergency, the staff of the Nauset Beach Administration Building and/or emergency responders should be notified. Essential vehicles will assist in escorting the vehicle off of the beach.

Violations
Any violations of the aforementioned protocol will not be tolerated. A zero based tolerance policy will be fully enforced. Monitors and Beach Rangers will be in constant contact to ensure enforcement. Beach Rangers will be authorized to revoke OSV stickers and eject the violators from the beach immediately. Violators of the escort protocols shall be subject to OSV sticker revocation and shall have their rights to operate an OSV on Nauset Beach suspended immediately for a period of one year from the date of the violation.

Escorting Program Reporting
Chick numbers, chick locations, and travel corridor locations/dimensions shall be provided to the Natural Resources Manager or Beach Director by the lead shorebird monitor daily, prior to commencing OSV escorts. A map showing the locations shall be posted at the Nauset Beach administration building and shall be updated daily. As required by the HCP, a daily implementation log will be kept to document staffing, frequency of brood monitoring, and compliance with OSV escorting procedures, and will be made available to MADFW upon request. Any violations, incidents or accidents associated with the vehicle escort program, including take of a chick(s) shall be immediately reported to MADFW and USFWS staff. In the event of an alleged incident related to the escort program, the Natural Resources Manager, Beach Director or their designee in coordination with a shorebird monitor shall cooperate with and assist Town, State and Federal officials with the investigation of the incident. Depending on the nature of the incident, the Town of Orleans, MADFW and USFWS reserve the right to suspend all vehicle escorts for such time as they deem appropriate.

Every week, a summary report will be submitted to MADFW. The report will include; (1) daily vehicle trip count (distinguishing counts for self-escorts versus caravans); (2) for each affected brood, daily observations of chick numbers and behavior including a daily sketch map of the observed range of the brood on the beach; (3) weekly tally and description of any rules violations and enforcement actions taken; (4) weekly tally and description of all observations of broods crossing or approaching <100 feet from the vehicle corridor; *both during the OSV travel windows and any other such observations* during routine monitoring; (5) any other notes, observations, or recommendations relevant to operating the escorting program.

By October 15th of each calendar year, the Town of Orleans will submit an escort monitoring report to MADFW describing at minimum, estimated age of chicks in each brood when self-escorting was initiated. Fledging success, escorting dates, number of broods, number of chicks present during self-escorting on each date, estimated daily chick survival based on daily brood counts, number of vehicle passages, and any documented "take" of chicks resulting from the vehicle escorting program shall be included in this report. The report will also contain recommendations for improving the efficiency and or effectiveness of the escorting program in the future.

4.2.2 OSV Use in the Vicinity of Least Tern Chicks

The Town of Orleans will include the same protective elements for Least Tern chicks as it does for Piping Plovers. Based on past years' shorebird monitoring it is anticipated that OSV use in the vicinity of unfledged Least Tern chicks will be limited to a subsection of the Pochet Overwash, the same section of beach where escorting past unfledged Piping Plover Chicks is likely to occur. Because Pochet Overwash is very wide and the bulk of the Least Tern Nesting activity is located along the east (seaward) section of the overwash, it may be possible to reroute the OSV corridor to the west, subject to MADFW and Conservation Commission approval, thereby minimizing risk to Least Tern chicks. However, due to the

presence of vegetation near the northern end of the overwash, rerouting is not possible in this area, and small numbers nest near the OSV corridor in this area in some years. With the exception of the Pochet Overwash area, Least Tern colonies are separated from the OSV corridor by an expansive dune system, and will not be exposed to potential take, as per the State Guidelines. Regardless of location, in no event will >20 unfledged Least Tern Chicks be exposed to OSV traffic. Again, based on past Least Tern nest locations and nesting phenology, the actual number of tern chicks to be exposed is likely to be considerably <20.

Impact Avoidance and Minimization Measures for Least Terns are as follows:

1. *Monitoring of colony sizes and chick exposure* – Because Least Tern chicks spend much time hiding in vegetation or other cover, and are fed by parents, they are much more difficult to count than Piping Plover chicks. In order to estimate the number of chicks exposed to OSVs, the following procedures will be followed. In addition to obtaining an estimate, the amount of mitigation to be provided will be sufficient to mitigate the exposure of 20 unfledged Least Tern chicks, a conservative assumption to address potential undercounting (see mitigation section, below). First, shorebird monitors will obtain at least two independent nest/chick counts in the five days prior to the anticipated start of the escorting program including one count with 24 hours of the start date. Estimates of number of active nests and chicks will be obtained for all sections of beach located within 200 yards of the anticipated escorted OSV corridor. The bulk of the counting and sketch mapping of nest and chick locations will be conducted from a distance with binoculars to minimize disturbance, using standard procedures to observe incubation, eggs, chicks, and (inferred) chick provisioning. In some cases it may be necessary to enter the colony to confirm the presence of nests. Sketch maps will include key landmarks (i.e. fence post numbers or distinctive beach debris) to aid in recounting. Detailed notes will be kept on all counts including, date, time begun, time ended, personnel, whether each nest/chick was confirmed or inferred to be present and the basis of the inference. The approximate age of all chicks that are directly observed will be estimated based on the attached Least Tern Aging Guide **(See Appendix H)**. MADFW has indicated that MADFW staff are likely to conduct independent counts or participate in joint censusing prior to initiation of the covered activity. During the period when OSV escorting is occurring unfledged chicks will be counted daily using these procedures, and every effort will be made to track the number of active nests, with formal recounts every three days during the escort period.
2. The maximum 15 foot wide travel corridor will be delineated with fencing and “no parking” areas will be delineated on the beachfront to prohibit parking within 200 yards of unfledged chicks.
3. Travel restricted to 6 hours/day; at preset times of day; daylight hours.
4. *Monitoring of chicks during vehicle passage* – One hour prior to the start of each daily OSV travel window, one or more qualified shorebird monitors (see below) will search the section of beach adjacent to and within 200 yards of the escort corridor to locate unfledged Least Tern chicks. The search will be conducted by the Compliance Monitor, or if carried out by another qualified monitor, information about chick locations will be conveyed to the compliance monitor

prior to the start of the escorting period. Areas with chicks located <50 yards from the corridor will be noted for extra attention during the travel period. During the travel period the compliance monitor will patrol the travel corridor checking for compliance with escorting procedures (e.g. speed limit and presence of escort), while also scanning for unfledged Least Tern chicks. Vehicle traffic will be temporarily halted if unfledged chicks approach within 30 yards of the corridor; however the beach manager will have discretion to restart traffic under certain circumstances even if chicks remain within 30 yards (e.g. young chicks hiding in vegetation and not moving). Compliance Monitors and shorebird monitors conducting the pre-travel searches will be responsible for searching no more than 500 yards of vehicle corridor and the associated tern habitat located adjacent to the corridor (i.e. a 900 yard travel corridor with Least Terns present will require to monitors). The Town acknowledges that DFW may, at its sole discretion require additional monitoring if the tern colony is subdivided into subcolonies with dispersed unfledged chicks (e.g. two different 200 yard sections of beach with unfledged terns subject to escorting, separated by 800 yards making it impractical for a single compliance monitor to cover the entire area)

5. Self- escort or escorted caravan of vehicles as described for Piping Plover, above.
6. Staff training, enforcement, and communication protocols as described above.
7. Mandatory OSV operator education as described above.
8. Vehicle ruts will be smoothed out at least once/day when young chicks (estimated <10 days old) are present as described above.

The Town of Orleans will notify DFW at least 24 hours prior to carrying out the covered activity affecting Least Terns, and will include a map and estimate of the length of the escort travel corridor as it affects unfledged Least Terns. Should the distribution of Least Tern chicks lead to changes in corridor length and location, DFW will be provided with updated maps and length calculations as quickly as possible, and no more than 24 hours after adjustments are made. In no event shall more than 20 unfledged chicks be exposed to escorted OSVs, cumulatively across the site.

Detailed reporting on the Least Tern escorting program, and distribution, exposure, and impacts to unfledged Least Tern chicks will be included in the annual report to be provided to DFW by October 15. The report will cover all of the topics listed above with respect to Piping Plovers, as applicable to Least Tern.

4.2.3 OSV Use in the Vicinity of Nesting Diamondback Terrapins

Diamondback Terrapins nest within the dunes of Nauset Beach, particularly in a section south of Little Pochet Island. As described above Terrapins nest predominantly in June and July. Nesting females may face some exposure to OSV traffic on the OSV corridor, but the corridor is likely to remain closed for a significant portion of the turtle nesting season for the foreseeable future due to restrictions to protect unfledged plover and tern chicks in Pochet Overwash. However, the corridor may still be used by essential vehicles when closed to recreational OSVs. To the extent that the corridor is open early or late in the Terrapin nesting season (prior to plover and tern nest hatching or after most plover and tern breeding is completed) there is some risk to nesting Terrapins. In addition, without protective measures there is some risk of hatchling mortality in the late summer and early fall as hatchlings emerge from

nests and head to Pleasant Bay.

The Town of Orleans will include the following protective elements for nesting Diamondback Terrapins. Beginning the last week of May through July, the area immediately adjacent to the OSV corridor will be checked on foot at least once daily by trained personnel to check for turtle tracks. During periods of peak nesting activity as determined by onsite track activity and consultation with experts at Mass Audubon, every effort will be made to increase searches to twice daily. Timing and frequency of the track and nest surveys will be adjusted on an annual basis based on consultation with experts from Town of Barnstable, MassAudubon, and MADFW to account for inter-annual variation in the timing of nesting. Area to be searched will extend approximately from Little Pochet Island to the vicinity of "Baghdad" cottage, but will be expanded or increased in consultation with MADFW to encompass the entirety of the area of significant turtle activity as refined be additional field observation. Tracks will be used by qualified personnel approved in writing in advance by MADFW to locate and protect nests from predators (part of the net benefit mitigation strategy). At times when the corridor is open to OSV traffic (including essential vehicles), standard tracking techniques will be used in an effort to determine if one or more females are located near (and in particular east of) the travel corridor.

To the extent that adult turtles are present or tracks indicate an area of high turtle activity, temporary turtle crossing signs will be placed on appropriate sections of the OSV corridor and vehicle operators will be advised of the situation at the gatehouse. Vehicle operators will also be requested to immediately report any turtle observations to the beach staff.

Based on ongoing consultation with MADFW, Mass Audubon, and experts from the Town of Barnstable, nests will either be caged on-site or moved and protected elsewhere. Hatchlings will be collected from caged nests following standard protocols to ensure their safety, and released into Pleasant Bay at Nauset Beach or headstarted in cooperation with the Town of Barnstable, Sandy Neck Reservation. A state permit for protecting nests and handling Terrapins will be obtained by qualified personnel in advance of implementing the program and all headstarted terrapins will be PIT-tagged prior to release.

Detailed information about the Terrapin Protection program will be provided in the October 15 annual report to be provided to DFW, including but not necessarily limited to dates and times of all track surveys, personnel, gps coordinates for any tracks observed crossing the OSV corridor, GPS coordinates for all nests, nest dispositions and fates, hatch dates, number of hatchlings hatchling disposition, protective measures taken (e.g. signage if OSV corridor is open), pit tag codes, standard carapace lengths (SCL) and weights for all headstarted individuals.

4.2.4 Proposed Reduced Symbolic Fencing Buffer at a Nest and/or Nest Moving Where No Other Option for Management is Available

As described above, in the past Piping Plovers have occasionally nested <50 yards from Callanan's Pass, necessitating closure of the entire beach north of the pass to OSVs (the Guidelines require a 50 yard buffer around nests). Unless a nest is located directly within the travel corridor, management will first

consist of reduced fencing. Prior to nest movement reducing symbolic fencing shall occur in consultation with MADFW staff.

Initially, it is necessary to determine if the incubating pair is tolerant of the reduction of fencing and increased recreational activates near the nest. Many pairs have demonstrated an increase tolerance to human activity nearby incubating nests, especially when the pair is well into the incubation period. The range of tolerant behavior to reduced fencing adjacent to nest differs widely. Some pairs will tolerate the reduced fencing well, continue to incubate, and bring the clutch to a hatch; while others will become increasingly agitated and reducing fencing increases the risk of nest abandonment.

4.2.4.1 Reduced Fencing Protocol *Prior to Nest Movement*

1. Fencing should only be reduced to the extent necessary to achieve specific recreational or beach operations objectives (e.g., opening a specific beach access trail) such as Callahan's Pass or Pochet wash area to gain access to Trails 1-5 and the town of Chatham area and to Nauset Spit.
2. Symbolically fenced buffers should not be reduced to less than 10 yards; in first movement, however, limited exceptions may be permitted provided that the fencing is reduced gradually and that the plan participant demonstrates a compelling need to maintain reasonable recreational and beach operational use.
3. The fence will be reduced another 10 yards or until a point where the OSV corridor and OSV use can continue with the pair undergoing steady incubation.
4. For example, if a nest is located less than 10 yards from a major beach access trail, the MADFW may allow less than 10 yards of fencing rather than authorize nest moving associated with Covered Activity. The extent of all proposed fence reductions must be included in the IAMP and approved by the MADFW based on consideration of the circumstances at a given site in a given year. Increments of yardage may be determined based on a site analysis I consultation with MADFW staff and Shorebird Monitors reporting on the overall behavior of the pair.
5. A fenced buffer larger than the target buffer will be established initially and maintained during egg laying and through at least the first 24 hours after clutch completion, but every effort should be made to maximize fencing distance from the nest during this sensitive period.
6. Fencing distance from the nest should be gradually reduced, in increments of approximately 10 yards, no more than once daily.
7. If fence reduction process successful based on intense monitoring from a distance then the need to the nest not be necessary.

4.2.4.1.1 Monitoring of Reduced Fencing

Monitoring will occur frequently at least 3 times a day. To reduce any added stress on a pair which has had the fencing reduced around the nest and *territory*, monitoring will occur by scopes to determine if steady incubation is occurring and/or the pairs are agitated not incubating and overexcited. In that case, the fencing will be increased in increments and/or to the original location to create a stable environment for the incubating pair. If the reduction of fencing is deemed successful and OSV use can continue without moving a nests nest will not be moved.

Should the reduced fencing prove to be impractical due to topography, location of recreational actives

and no alternative access route available nest moving may be considered as the next viable step in consultation with MADFW staff and in accordance with Nest Moving Protocols as set for the in the HCP.

4.2.4.2 Protocols for Nest Moving

In the event that reduced fencing results in repeated or prolonged flushing of birds, the Town will temporarily close Callanan's pass and request authorization to attempt nest moving. If nest movement is deemed necessary and approved, the Town will utilize their experienced monitoring staff in consultation with MADFW to move a nest. The general protocols are to wait 24 hours after the nest is complete and to await appropriate weather conditions. The following steps will guide any nest moving:

1. Nests will not be moved until at least 48 hours after the clutch is completed.
2. Nests will not be moved during inclement weather, in extreme heat, or during evening hours.16
3. An appropriate relocation site will be chosen in suitable habitat that minimizes the movement distance to the extent practicable. However, the MADFW may approve a greater movement distance in order to minimize disturbance to the nest after relocation, or disruption of breeding by adjacent pairs. For example, it may be preferable to move the nest a greater distance to a site that is visually isolated or further away from an OSV corridor. MADFW will be consulted onsite to determine the final nest moving location and strategy for gradual moving.
4. Nests will be moved using the "cylinder/plate/platform method" (Gordon and Kruse 1999). This method allows the intact nest cup, with eggs, to be moved intact in a large cylinder pressed into the substrate around the nest. The excavated nest is then placed on a platform with adequate drainage to allow for rapid repeated movement of the nest over small distances, if necessary. Visual landmarks (i.e., rocks, sticks) are moved with the nest to serve as visual cues.
5. Nests will be moved gradually to reduce the risk of abandonment. The first move will likely be less than 15 feet; however, distances may vary site by site, as determined by MADFW (see 3 above). MADFW staff will be present on-site to oversee, at minimum, the first nest moving attempt. Orleans staff involved in nest moving must have at least one year prior shorebird monitoring experience and have past experience this season monitoring the nesting pair with a nest being moved.
    a. If incubation is not resumed within 1.5 hours, the nest will be moved halfway back to the original nest location and monitored for signs of incubation.
    b. If incubation is observed at the relocated nest, the nest should be monitored for 90 minutes to ensure consistent incubation behavior before attempting to move the nest a second time.
    c. The nest may then be moved repeatedly, up to two times per day, in 10-20 foot increments following this monitoring procedure. The MADFW may allow up to three movements per day once procedures for repeated nest-moving have been tested and proven. The Town will obtain verbal approval from MADFW prior to each nest moving attempt.
    d. If inconsistent incubation or significant distress behavior is observed, nest movement should be halted and resumed the next day.
    e. If the first attempt to move the nest is unsuccessful, nest moving may be attempted again the following day.
    f. In cases where parent birds fail to accept the moved nest, the MADFW will be consulted to determine the best course of action.
6. The vehicle corridor will not be reopened until MADFW provides written approval to do so.

5 Mitigation

Piping Plover and Least Tern - The Town will provide funding for off-site educational outreach, increased law enforcement and selective predator management to be administered by DFW. As specified in the HCP the Town will provide $5,800 per year for each piping plover brood, nest or territory exposed to covered activities. A maximum of two exposures are permitted per year. Because the funds will be used by DFW to benefit both Piping Plovers and Least Terns at sites where the two species co-occur, no additional payments will be necessary for Least Tern mitigation. In the unlikely event that only Least Terns and no Piping Plovers are exposed to covered activities, the Town will still provide $5,800 to mitigate impacts to Least Tern. These funds will be sufficient to achieve the 2.5:1 mitigation ratio for both Piping Plovers and Least Terns as described in the HCP. Prior to carrying out covered activities during a given beach season; during the three year COI term, the Town will deposit mitigation funds into an escrow account ***(See Appendix I).***

Diamondback Terrapin - The program of nest protection and headstarting described above will provide a significant net-benefit the Pleasant Bay Terrapin subpopulation given the relatively low risk associated with OSV use and the proposed impact minimization measures.

6 Budget

The approved annual budget covering all management and staff associated with implementation of the IAMP is detailed below:

Estimated Costs for Implementing HCP	
ITEM	**COST**
Vehicle Monitors	$12,096
HCP Monitors	$15,552
Public Education Program	$1,000
Uniforms	$975
Off-site Mitigation (2 take exposures)	$11,600
MESA & Conservation Mgmt Plan Fee (1 time fee)	$900
TOTAL	**$43,023**

7 Appendices

A. **Nauset Spit Special Conditions for ORV Use (1991 SE 54-723)**
B. **Off Road Vehicle and Beach Management Plan for Nauset Beach South dated 6/18/14 (2015 SE 54-2246)**
C. **Nauset Beach Rules and Regulations for ORVs**
D. **5 Years of Massachusetts Shorebird Census Data for the Nauset System**
E. **Town of Orleans OSV HCP User Guide/ Procedures and Conditions**
F. **Town of Orleans Non-Lethal Predator Control Program for the Protection of Federally Endangered Piping Plovers at Nauset Beach**
G. **Town of Orleans and Chatham Annual Beach Agreement**
H. **Least Tern Aging Guide**
I. **Mitigation Escrow Agreement Orleans**
J. **Proof of Ownership: Assessor's Map of Beach Parcels**